

COMPUTERWORLD

States to plug in EDI

EDS offers net service for tax automation

By Lynda Radosovich
WASHINGTON

Taxes are never good news, but for corporate taxpayers and state revenue departments, a new electronic data interchange network promises to simplify the job of filing returns.

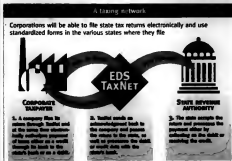
The Federation of Tax Administrators, a nonprofit organization representing all 50 states, expects to finalize by Oct. 29 a contract with Electronic Data Systems Corp. for EDI value-added network services.

A new division of the FTA, called

TaxNet Government Communication Corp., was created to operate the service, which will allow corporations to electronically file most types of tax forms with participating states. The service, called TaxNet, uses standard EDI transaction sets approved last year by the American National Standards Institute's X.12 committee.

The value of the contract is unclear because payment to EDS will depend on the amount of traffic generated by the state agencies, according to EDS and the FTA. An FTA spokesman said it would be

EDI net, page 25



PC nets gain control

By Elisabeth Horwitz and Lynda Radosovich

Management of networked PCs is expected to take a giant step forward this week, as leading vendors demonstrate the first products to support the Desktop Management Interface standard.

Formulated by the Desktop Management Task Force, with final code being distributed this week, DMI is said to standardize how various desktop systems, their hardware and software components, make status and configuration information available to popular network management platforms and applications.

Vendors that are taking part in this week's DMI, page 12

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Microsoft plans database unity

By Michael Vizard
LAKE BUENA VISTA, FLA.

Microsoft Corp. last week outlined a long-term plan for unifying its diverse database engines and creating an object repository intended to simplify application development.

Details of the repository architecture, along with the actual components of the unified database, are still being worked out at Microsoft.

However, the company's initial focus will be to unify its various database architectures by combining elements of its database engines into a single entity that will support dBase, Visual Basic and the C and C++ languages (see chart page 14).

Currently, Microsoft supports three database engines: FoxPro, which is a dBase clone; Access, which supports Visual Basic; and SQL Server, which is a relational database based on an engine supplied by Sybase, Inc.

Driving the effort to unify its engines is the

fact that IS organizations are going to require architectures that will allow their applications to run on any database, regardless of the language in which they were created.

For example, Kenneth Sipos, a real estate specialist who develops Xbase applications for a geographic information system used by the city of Philadelphia, noted that his managers

need to be able to run his applications on the mainframe systems that are used in other departments. "Microsoft has to unify its database engines," Sipos said.

On top of the common engine, Microsoft is expected to develop a repository, tentatively referred to as a data object model, that will essentially provide the basis for managing the sea of objects that developers will use to create applications for the Calvo object-oriented operating system due in 1995.

"We're pretty close to making a decision on getting into the repository business. It pretty much looks like we will," said Roger Helms, MI

Microsoft, page 14

Sculley exits Apple; multimedia in future?

By Michael Fitzgerald and James Daly
CUPERTINO, CALIF.

John Sculley's 10-year odyssey at Apple Computer, Inc. ended anticlimactically last week when the man who became the company's visionary died the expected and resigned.

Sculley was replaced as Apple chairman by longtime board member A.C. (Mike) Markkula, who sources said had led a June move to strip Sculley of his responsibilities as chief executive officer and give them to Michael Spindler (CW, June 21).

Sculley operated largely as a figurehead through the summer, even taking a regularly scheduled sabbatical. He could not be



John Sculley resigned amid pressures from Apple's board

reached for comment.

Sculley's departure came one day after Apple reported record fiscal fourth-quarter revenue but a steep profit drop. It also followed the resignation of Robert Fuest, who had headed Apple's beleaguered U.S. organization since 1990.

"This is a changing of the guard, and it's probably healthy for Apple," said Tim Bajarin, president of Creative Strategies Research International, Inc. in Santa Clara, Calif. "John was a lame duck, and Spindler didn't need his shadow."

What Sculley will do now is unclear. Industry watchers speculated that the evangelical Sculley

Sculley, page 16

Questions answered by Andrew Connolly, managing partner, for information technology professionals. See page 15.

Remember that the market is not a static state. It is a dynamic state. It is a state of flux.

3.6

2.9

2.9

2.8

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NEWS

- IBM releases a version of OS/2 that integrates seamlessly with Windows and DOS. *Page 4*
- Microsoft promises the next upgrade of Windows NT will extract more performance from existing Windows applications. *Page 4*
- Pall PC lines show only glimpses of new technology. *Page 6*
- Apple launches a full range of new Macintoshes. Questions is, are buyers already confused by the selection? *Page 6*
- TI offers migration tools and process re-engineering products to ease the way into eNet/ server. *Page 8*
- IBM's Software Solutions division unleashes a barrage of products, but, at least in terms of client/server offerings, it's a new kid on a crowded block. *Page 8*
- AMDahl will announce layoffs, along with its third quarterly loss of the year and the decision to halt in-house development on two SPARC-based machines. *Page 10*

DESKTOP COMPUTING

- When Apple's first PowerPC-based Macintosh arrives in March, few applications will be ready to exploit its RISC performance. *Page 35*

WORKGROUP COMPUTING

- Mass migration of messaging vendors to object technology promises simpler reconfiguration and easy movement of compound documents. *Page 55*

ENTERPRISE NETWORKING

- Competitors in the shipping industry put aside their differences to create a standard EDI interface for customers. *Page 49*



Management. At furniture retailer Ikea, IS director Kerry Ruhl has to maintain a delicate balance between servicing the customer and keeping prices low. *Page 37*

LARGE SYSTEMS

- Microsoft and the OSF both promise software distribution utilities to resolve the version management chaos in distributed open systems. *Page 65*

APPLICATION DEVELOPMENT

- High-end tools for ambitious client/server development appear, and not a moment too soon. *Page 66*

MANAGEMENT

- A lot of firms talk big but deliver little in terms of customer service. Often the problem is badly conceived information systems. *Page 107*

IN DEPTH

- Minorities are still struggling in the information systems field. According to a recent Computerworld survey, And minority males have it particularly hard. *Page 135*

CW GUIDE

- Windows PC databases are gaining ground as front-end development tools, especially for workgroups. *Page 117*
- Buyers' Scorecard: Users of Borland's Paradox and Microsoft's Access and RxDPro rate them about equal. *Page 128*
- Piling Line: Lotus' Approach is easy to use, but it lags on query and reporting, according to users. *Page 133*

CAREERS

- Rapid application development requires a mental balance between planning and spontaneity. *Page 142*

MARKETPLACE

- Willing to gamble? Small start-up telecom suppliers can deliver big profits. *Page 153*

COMPUTER INDUSTRY

- Wall Street focuses on Intel's looming competition, not its record earnings. *Page 161*

COMMENTARY

- A commitment to protect customers' private data is a competitive advantage waiting to be picked, writes Bill Laberts. *Page 22*
- Start talking tough to your vendors, suggests Ted Krum. Otherwise they'll keep feeding you go-wha confections. *Page 33*
- The PowerPC won't make your life any easier, predicts John Gantz. In fact, it will probably multiply your development headaches. *Page 38*
- IBM's RS/6000 may be the platform to finally fulfill the company's Future System dreams, says Jean Bosman. *Page 55*

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Executive Briefing

Unmeasurable payback is an elusive thing. Andersen Consulting says the vast majority of senior executives in a recent survey were not convinced that technology investments were paying off as well as they should be. Manufacturing and distribution logistics were areas of particular weakness. *Page 16*

Customer service is another field in which IS isn't winning a lot of medals. Despite the very loud and pervasive buzz about customer satisfaction, few businesses are actually delivering great service. And much of the blame is being laid at the feet of IS. *Page 107* GTE aims to be an exception. That company's Telephone Operations group

says it has achieved a 30% to 35% productivity improvement from re-engineering its customer service system and migrating it to a client/server environment. *Page 65*

Client/server is no panacea, particularly when it comes to monetary measures. For one thing, you'll probably have more expenses to justify. According to

Gerber Group analysis, this architecture often costs one-and-a-half times as much as a mainframe-centric one. The biggest "gotchas" are in service, support and administration. *Page 35*

Management of networked PCs should get easier now that products are starting to emerge to support the Desktop Management Interface standard, which effectively allows network administration to drill down to desktop level by standardizing status and configuration reporting methods across desktop systems. *Page 7*

Other remedies are emerging for administrative headaches with distributed systems. Microsoft and the OSF are both promising distribution managers to help IS

managers organize and administer open systems applications across enterprises. *Page 65*

Novell's Systems is tackling the integration of portables and desktop data with a new Windows utility called SmartSync. *Page 35*

Is there enough of a future for OS/2 to build a career on? One survey says so, but user group growth suggests demand will grow. *Page 147* IBM recently shipped several deals for the sale of more than 100,000 packages. *Page 30*

EDI mistakes: Clothier Saks Fifth Avenue has combined EDI and E-mail systems using X.400 networks. Analysts believe this is how voice, data and video traffic will be consolidated. *Page 69*

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OS/2 to soon get Windows emulation

By Ed Scanlon

IBM's Personal Software Products (PSP) group is expected to announce a full-functional version of OS/2 at Comdex/Fall '93 next month that lets users seamlessly integrate OS/2 on top of copies of DOS and Windows running on Intel Corp. machines.

Alternately called Ferengi or Product X by sources close to IBM, the product is a version of OS/2 that supports to save information systems time by allowing OS/2 to be plugged into existing code and by seamlessly integrating OS/2 functionality into Config.sys and Autoexec.bat files in Windows and DOS. In short, it saves IS from having to wipe disks and rebuild its configurations when adding OS/2 to its desktop mix (CW, Sept. 13).

The Ferengi effort is not an attempt to reverse-engineer Windows. Instead, IBM has figured out a way to break the major executables within Windows.

With Ferengi, PSP hopes to free itself from the significant royalty payments it must make to Microsoft Corp. for each copy of OS/2 it sells. IBM and Microsoft made their final code source code swap on Sept. 16, following the expiration of their licensing agreement.

An IBM spokesman declined to comment specifically on the project. He added, however, that it is PSP's intent to "target Windows users and to make their investment in moving to OS/2 as painless and risk-free as possible."

The product will be sold as a separate shrink-wrapped package priced at \$49, according to several beta testers and those familiar with the company's marketing plans. This compares to \$149 for OS/2 2.1, which does not provide the seamless integration offered by Ferengi. As such, some observers fear IBM could undercut its own pricing structure.

Some of the reasoning behind Ferengi's aggressive pricing is the growing user interest in 32-bit operating systems that has resulted from the heavy marketing efforts for OS/2 and Microsoft's Chicago, sources close to IBM said. With Chicago not expected until the middle to end of next year, IBM sees a chance to capitalize on the opportunity.

Ferengi is still in beta, but PSP is hoping to make it widely available before the end of the year. Doing so would give IBM a minimum window of about six months to beat Chicago to the punch.

"A lot of users we talk to who want 32 bits on the desktop are not willing to wait for Chicago," said one source close to IBM. "And if they don't like [Ferengi], it is real easy to remove and only costs you 50 bucks to take a look."

That could account for OS/2's corporate sales momentum. In the last six weeks alone, PSP has signed corporate licensing deals for about 180,000 copies with a handful of large insurance companies and banks (see story page 39).

While developers who have seen beta copies of the code are happy with its performance in running existing Windows and DOS applications, some wondered if the product's proposed \$49 price tag might hamper sales of OS/2 2.1, which is sold through dealers for more than \$100. "I don't think IBM would be stupid enough to let [Ferengi] hurt existing sales, but the way things stand now that might happen," one third-party developer said.

The Ferengi code is only intended for DOS and Windows running on Intel-based PCs.

NT to pick up the pace

Next iteration will run Windows applications more quickly

By Ed Scanlon
MELVILLE, MASS.

Microsoft Corp. officials last week confirmed that the next update of Windows NT will enable faster performance of existing Windows applications, an enhancement that tops the wish list of many corporate users.

Some users over the last month have complained that Windows NT is running standard Windows applications markedly more slowly compared with running them under Windows 3.1. They also noted that OS/2 2.1 in many cases also runs those same applications faster in a window than can Windows NT.

One fix at a time. In general, Microsoft could have focused more on NT's performance in the initial release, but that would have meant sacrificing some degree of reliability.

The release will address performance goals. We did not want to give up better con-

trol over crashing for [additional] speed," said Moshe Dunsie, director of Windows NT Program. He indicated that the next update most likely would be in the first half of 1994.

In that update, Microsoft wants to significantly improve NT's speed through routine optimization of the operating system's code—without having to remove any vital features, Dunsie said.

The company is now working with more advanced development utilities that can better monitor memory usage by determining where code can be better swapped in and out of memory, while also making more efficient use of CPU cycles.

Another goal for the next release is support for transferring data from DoubleSpace drives to Windows NT drives, a feature some believe is important for more seamless integrating users into

client/server applications. Being able to easily shuttle the data be-

tween DOS and NT will help facilitate the implementation of a client/server application. IBM must resolve the same problem with PC DOS 6.1's Adios compression program and OS/2 2.1.

Other features slated for addition to NT include better account lockout capabilities and support for plotter drivers.

Cairo comes first

While Microsoft will issue a "point" release of NT in the next few months, it does not anticipate releasing a full integer release before Cairo, the next generation of NT, some time in 1995.

Cairo is expected to have all the same major underpinnings as NT, Dunsie said, including the same kernel, 32-bit graphics engine and network connections. Perhaps the only major difference will be the user interface, which should look very similar to that of Chicago, the company's 32-bit version of Windows for the desktop.

Despite recent speculation on the topic, Dunsie stressed there would not be a "lite" version of Windows NT that would require much less main memory and disk storage than the current version's 12MB to 16MB bytes of RAM.

"Chicago will do a pretty good job being an 'NT Lite,'" Dunsie explained.



Ferengi's future

Depending on the degree of OS/2's future success, Ferengi could add up to substantial savings for IBM. Currently, PSP pays Microsoft approximately \$40 for every copy of OS/2 it sells. PSP is approaching sales of 3 million units of the OS/2 2.1 series, mostly through its beta line, in individuals and smaller companies.

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The Ferengi code is only intended for DOS and Windows running on Intel-based PCs.

Quick fix

Microsoft last week released one of its first series of bug fixes for Windows NT. The fixes addressed cases for "hives files," mostly addressing problems caused by obscure hardware/software combinations some customers have run into together. Microsoft will release quarterly fixes for NT users over the electronic bulletin boards accumulated from individual users. Not for mass.

Lotus enjoys fruits of upgrade cycle

By Michael Vizard
CAMBRIDGE, MASS.

Lotus Development Corp. last week announced substantially improved financial results for its third quarter due to a combined increase in spreadsheet, suite and Notes sales.

For its third quarter ended Oct. 2, Lotus reported a net profit of \$18.3 million, an increase of 157% over the comparable period last year, when it earned \$7.3 million from operations. Sale of its investment in Sysbase, Inc. stock brought Lotus' earnings to \$30 million for that period a year ago. Revenue in the latest quarter grew 16% to \$240.1 million.

Welcome surprise

While Lotus' improved revenue picture was expected in the wake of the release of 1-2-3 4.0 for Windows and a renewed emphasis on SmartSuite, the company's net income increase took analysts by surprise.



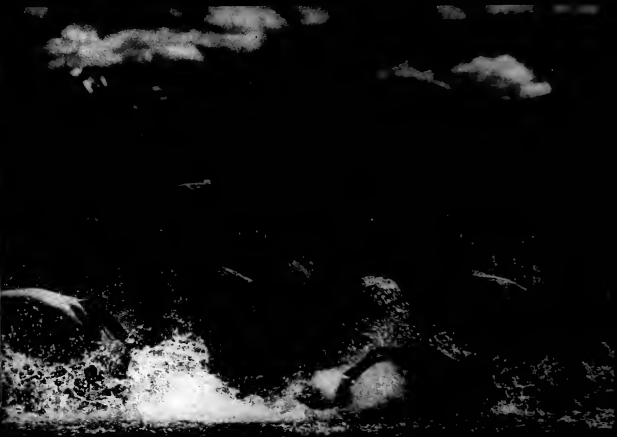
ries analyst at Robertson, Stephens & Co. in San Francisco.

Rogers said Lotus' immediate future looks bright, but whether Lotus will be able to maintain momentum once the 1-2-3 upgrade cycle peters out and Microsoft Corp. gets back in the market with Office 4.0 remains to be seen.

Not biggest breadwinner

In the meantime, Rogers said he expects Lotus to continue to push Notes but added that Notes is still a relatively small percentage of Lotus' business. According to Lotus executives, communications products will contribute about \$250 million in revenue this fiscal year, with Notes and CC-Mail contributing roughly equal portions.

Lotus estimates that it will have 200,000 Notes seats installed by the end of this year at about 2,500 companies. It also expects to have 1.5 million CC-Mail seats installed in the same time period. This compares with an installed base of 135,000 Notes seats and 1.09 million CC-Mail seats in 1992.



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News Shorts

Congress debates Microsoft case

Committee members and witnesses at a U.S. House of Representatives hearing last week avoided tackling head-on issues surrounding the U.S. Department of Justice's antitrust probe of Microsoft Corp. Most agreed that Microsoft does dominate the desktop operating system market, but several pointed out that a company's market dominance does not mean it engages in unfair competitive practices. "Just because an industry is fast-moving and complex does not mean it is immune from antitrust... problems," said Rep. Jack Brooks (D-Texas). "Nor does it mean that the market would necessarily be served by the replacement of one dominant industry monolith with a number of smaller companies."

Rumba, anyone?

Wall Data, Inc. in Redmond, Wash., announced last week that it will support IBM's Advanced Peer-to-Peer Networking End Node protocol in its Rumba series of DOS/Windows-based multi-mainframe software products, starting with Rumba Office. Rumba Office is said to be the first product to give users access to multiple applications on multiple IBM mainframes and AS/400s, as well as on Digital Equipment Corp. VAX/VMS hosts, from a single Windows interface.

Borland, Microsoft at PC Expo

Borland International, Inc. will announce this week at PC Expo in Chicago that its new V for Unix is shipping. At that time, Borland will also announce that Version 2.0 of its dBase Compiler for DOS, which compiles and distributes applications that are twice as fast as dBase IV applications, is also available. Meanwhile, Microsoft Corp. is expected to ship a Unix version of its Pro in the first half of 1994.

Cornering the high-end display market

Matix, Inc., a joint venture between Motorola, Inc. and In-Pocus Systems, Inc., has begun business as the only high-capacity, flat-panel display maker in North America. Paul Gullik, the venture's co-chief executive officer, said the Willamette, Ore., company will focus its new active-addressing color technology on displays no larger than 5 by 7 inches, meaning that the new plant and technology will not cause supply problems in the color notebook market. Gullik said that some established passive-matrix display vendors will likely purchase integrated circuits from the new venture, leading to better, cheaper color notebook displays late next year.

Unix does Windows

The Santa Cruz Operation's EXI Corp. subsidiary announced a user interface that makes Unix applications look like Windows applications. The new Win-Uix software marks a shift in EXI's traditional Unix interface business. Win-Uix will be available in the first quarter. Pricing was not announced.

SHORT TAKES James A. Urrah, chairman and chief executive officer at Unisys Corp., told attendees at last week's user group conference in Minneapolis that the computer maker will announce its ninth consecutive profitable quarter in the next two weeks. Urrah also pointed out that Unisys is one of the finalists vying for the coveted Malcolm Baldrige National Quality Award, which will be announced this week.... The Software Publishers Association has teamed up with nonprofit organization Gifts in Kind America to encourage companies to donate software to community organizations.

More news shorts, page 16

Pentium-based PCs wait off-stage

By Michael Fitzgerald

Vendors will bring to market a cornucopia of PCs in the next month that will offer a glimpse into the future. Debuting will be several new Pentium-based systems that use the Peripheral Component Interconnect (PCI) local bus.

The new PC lines, highlighted by products from the IBM PC Co., Compaq Computer Corp. and Dell Computer Corp. in the next three weeks, will set the stage for 1994, in part because Intel Corp. has missed target dates for new versions of its 486.

The PC Co. will begin this assault today by introducing a PS/ValuePoint that combines Pentium and PCI. The 60-MHz Pentium-based system comes standard with 16M bytes of RAM, is expandable to 128M bytes and has a 42M- or 567M-byte hard disk.

The system features a radically

redesigned architecture centered on a 64-bit data path that takes advantage of Pentium's 64-bit memory bus, which means that twice the information can flow between main memory and the processor.

Various models of the ValuePoint line will link multimedia and energy conservation features, in-

cluding some models designed to be AS/400 nodes. Dell is expected to combine Pentium and PCI in its new low-end Dimension V, which will be unwrapped in a Nov. 15 Comdex/Poll '93 announcement. Sources said

High power

Leading PC makers' new fall line of high-powered PCs

Company	Processor	Memory	Storage
IBM PC Co.	Pentium V	16MB/32MB	PS/ValuePoint
Compaq	Pentium	16MB/32MB	Pro
Dell	Pentium	16MB/32MB	Pro

cluding some models designed to be AS/400 nodes.

Dell is expected to combine Pentium and PCI in its new low-end Dimension V, which will be unwrapped in a Nov. 15 Comdex/Poll '93 announcement. Sources said

Compag, meanwhile, will stick with its Q-Vison graphics bus for its upcoming Pentium products. Pentium is expected to appear as part of a Nov. 1 announcement unveiling the DeskPro/SE and phasing out the DeskPro.

Analysis downplaying the announcements, saying Intel cannot ship enough Pentium now to have a major impact on the market.

"PCI is the big wave in graphics over the next year, but it will be significant when Pentium ships in large numbers," said Jeffrey Henkel, an analyst at BIS Strategic Decisions in Norwell, Mass.

Apple seeks rebound with new crop of machines

By James Daly
CUFFERTINO, CALIF.

Apple Computer, Inc. hopes to offset last week's mixed financial report this Thursday when it fires off its biggest product launch of the year. This week's harvest should yield a bumper crop of Macintoshes ranging from high-end Quadras to portable Duo and Performas.

"It's important for Apple to get back a full head of steam," said Richard Zwetckebaum, a research manager at International Data Corp. in Framingham, Mass. "Like most vendors, they rely heavily on the fourth quarter to make their year. This will start them off with a bang."

The announcement, the latest in a long tradition of October product launches for Apple, will slightly reorganize the Macintosh product line and continue its demarcation into four areas: the PowerBook for mobile users, Quadra for business, Performas for home and LC for education.

The new additions could backfire for Apple if they serve to fur-

ther confuse users about the Macintosh product line. Many already consider it congested, with little distinction among some models.

"It's sometimes hard to figure where one model ends and the other begins," said Brian Connors, manager of the information center at DRII Airways, Inc. in Redwood

the concept of the Duo, which was widely hailed when it was introduced a year ago. The Duo is a portable PowerBook that can be inserted into a desktop station to offer both the power of a desktop PC and the flexibility of a notebook system. But in many ways it has not lived up to expectations.

Like many Apple products, the Duo was beset by an early shortage. And its docking mechanism was not available in quantity for two months after the product launch. "It was a bit of a slow start," admitted Peter Fetschen, worldwide product manager at Apple's portables division.

Still, the portables could represent a big growth area for Apple. In a recent survey of 180 technical users by the Business Research Group in Newton, Mass., more than 40% of the respondents said they use their portable computers on a daily basis.

Apple has given what Zwetckebaum called "a middle kick" to the Duo line through the addition of the crisper active-matrix displays. With the new Duo, Apple is also expected to address some of the battery life problems of its PowerBook portables.

Apple is also expected to add seven models to its Performa line priced from \$600 to \$1,800.

Examples of Apple's new line of PCs and their prices

Model	Processor	RAM	Storage	Price
Quadra 605	33-MHz 68030	4MB 68010 RAM	128MB 68010 RAM	\$1,400
Duo 250	33-MHz 68030	4MB 68010 RAM	128MB 68010 RAM	\$2,600

City, Calif. "But I suppose it's the nature of the beast because if you put out products only once a year, you're considered behind the times."

Others say Apple has taken it too far. "There are so many models it's just ridiculous," said Mike Bailey, a systems integrator at Lockheed Missiles and Space Co. in Sunnyvale, Calif. "It's a total marketing exercise."

The Duo additions, however, were welcomed by many users. Macintosh users fell in love with

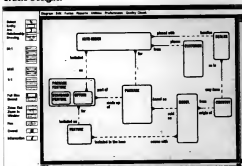
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ORACLE

TI tools will keep legacy systems going

Mainframe components continue to run during client/server transition

By Melinda-Carol Ballou
BOSTON

■ Seeking to address the needs of corporate developers burdened by decades of legacy code, Texas Instruments, Inc. will this week demonstrate a tool that lets programmers modify and keep existing programs running as they migrate to client/server systems.



Tool time

The tool, called Current Systems Modification (CSM), will perform an impact analysis about the consequences of changes to the code and will then generate the updated Cobol code. TI, which co-developed the tool with Price Waterhouse, will demonstrate it here at CASE World. CSM began shipping earlier this month.

To find related pieces of code, CSM requires an analyzer tool — Current Systems Analysis (CSA), which stores the data in a dictionary. CSM then acts as a scalpel for the removal of relevant chunks of important code and parties in subroutines to give the old program access to required functions after they have been removed. In this way the legacy programs can continue operating as developers make the transition to a new architecture.

One module fits all

One large health insurance company was able to pull together 2,000 disparate programs re-

lated to claims reconciliation, for instance, and centralize them in a single module.

For developers migrating to client/server or contemplating the arrival of object-oriented operating environments, these sorts of tools may prove to be lifesavers, according to

Wayne Anderson, director of San Francisco MIS at United Airlines, is in the process of migrating 88 systems that support United's aircraft maintenance. "We have hundreds of millions of lines of code, and we can't lose that investment," Anderson said. "We have to get literally from here to there.... This is a tremendous thorn in our side."

Check it out

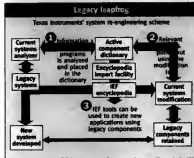
Anderson's organization is already using TI's Information Engineering Facility (IEF), a computer-aided software engineering tool kit, and is interested in checking out CSM.

Legacy analysis agreed about the need for such transition tools.

"You need a transition architecture in order

to move to your target environment, and you have to be able to do that while getting your existing business done," said Jim Stutz, analyst at Gartner Group, Inc., a Stamford, Conn., consulting firm.

"Assuming that it works as advertised, the approach that TI is using will allow you to keep



your existing components running while you make the transition, and when you're done, you should end up with reusable components," Stutz added.

In addition to CSM and CSA, an encyclopedia import facility will move pieces of the code to IEF for co-development.

IBM fields tools for client/server game

By Johnnie Ambrosio
WHITE PLAINS, N.Y.

IBM's first significant foray into the client/server tools market, accomplished last week by its announcement of a visual programming package, met with mixed reactions.

Although it is necessary for IBM to offer client/server tools — and some users and analysts said that the company's new VisualAge package is a well-architected beginning step — it is the new kid on a crowded block. Further, unlike some of the existing PC tool players, IBM's name is not synonymous with the client/server market in many shops.

IBM is "not even on my radar screen when I think client/server."

—Frank Monteleone
NutraSweet Co.

One of the crowd

Frank Monteleone, information technology director at NutraSweet Co. in Deerfield, Ill., said that although client/server is a strategic direction for his company, he does not think of IBM in that light.

"They're not even on my radar scope when I think client/server," Monteleone said. "To me, they're

just another contender."

Many vendors are going after the market for corporate client/server tools, including established computer-aided software engineering suppliers such as Texas Instruments, Inc. and KnowledgeWare, Inc.; fourth-generation language purveyor Cognos Corp.; database vendor Oracle Corp.; and start-ups including Dynasty Technologies, Inc. (see story page 95).

Crowded or not, IBM is wading forward. "We want to place IBM firmly in support of creating open client/server applications," said Jon Hemming, IBM's manager of market strategy. He pointed out that VisualAge, as well as some of the other IBM tools yet to come (see story at right), were designed from the ground up for the client/server world, as opposed to being extensions of existing mainframe products.

Hemming added that IBM is still working on its long-promised LAN repository, the basis of which will be Object Design, Inc.'s object-oriented database. "We remain

committed to providing better cross-tool integration," he said.

For now, however, C. F. Wong, database administrator at the Bank of Montreal and a VisualAge beta tester for about three months, said the product is "quite robust and extensible, and the architecture is solid." The bank is using VisualAge to test object-oriented programming techniques, no production applications have been scheduled yet.

Large-scale forte

Judith Hurwitz, president of Hurwitz Consulting in Watertown, Mass., said IBM has a shot at this emerging market.

"If they play this right, they could have a critical role. They understand better than anybody how to do large-scale, mission-critical development," she said.

Others are not so sure. Rich Pinkelstein, president of consultancy Performance Computing, Inc. in Chicago, said IBM lacks direction in this market. "The individual tools look interesting, but there's a ton of products coming out from all the different divisions with no coherent strategy," he said.

Equally important, Pinkelstein added, is the fact that the IBM sales force is not well-trained in how to sell these new tools.

A look at the roster

IBM's Software Solutions Division — formerly known as Programming Systems — introduced more than 20 new packages last week [ENR, Oct. 15].

Among them are the following:

- **VisualAge**, an object-oriented visual programming tool that allows developers to design and deploy applications by putting icons together on a screen. The first version, available within the next six months, will run under OS/2 and Windows, followed by AIX and other non-IBM platforms. Prices are \$2,500 for the single-user version and \$5,000 for the team version.
- **HighPoint**, an application generator that runs on both the host and PC platforms, and **ReDiscover**, a tool that helps developers reuse existing Cobol code as an object on the PC. Both products will be available within a year and will follow the VisualAge platform architecture.
- **IBM Client/Server for Windows** provides a way to access mainframe IBM applications from a Windows-equipped PC.
- **Database Version 1.3** helps manage multiple databases.
- As reported, IBM also announced additions to its Information Warehouse family of products [ENR, Aug. 6]. These include **DataSight** — an on-call catalog of information that is available in the warehouses — and new data replication products.
- Finally, IBM said its **DB2/4000** database management system, announced in March, will ship next month.

—Johnnie Ambrosio



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Amdahl to continue restructuring

Further layoffs expected in response to anticipated third-quarter loss

By Jean S. Bosman
SUNNYVALE, CALIF.

Anticipating a third consecutive quarterly loss, Amdahl Corp. plans later this month to reveal additional cost-cutting moves, including a decision to halt devel-

opment of two SPARC-based Unix machines, a company spokesman confirmed last week.

The \$2.5 billion, IBM-compatible mainframe firm has reduced its work force by about 2,000 during the past 12 months [CW, April 26] and last week said it may

announce further layoffs. The anticipated third-quarter loss, which would include a significant write-off, is expected to exceed the second quarter's \$23.6 million loss, Amdahl said.

Amdahl's continuing woes relate, in part, to IBM's aggressive mainframe dis-

counting, a prolonged European recession and an ongoing shift in its strategy to buy rather than build components.

The decision to end development of SPARC-based machines, however, will not impact Amdahl's effort to build a SPARC parallel processor with Sun Microsystems, Inc., according to Sun and Amdahl sources.

Although restructuring details have not been disclosed, analysts speculated that Amdahl's in-house SPARC develop-

A stronger focus

Amdahl posted losses of \$263 million in the first half of 1993, including \$277 million in restructuring charges and write-offs. The Amdahl that emerges after the restructuring effort will be smaller — with fewer than 7,400 employees worldwide — and more focused on building high-performance IBM-compatible mainframes and providing integration services.

ment efforts were getting too costly — possibly hitting more than \$100 million.

"I see them eliminating their Unix hardware group and taking a write-off," noted John B. Jones Jr., a vice president of technology research at Salomon Brothers, Inc. in San Francisco.

Last month, Sun and Amdahl agreed to codvelop an industrial-strength version of SunSoft, Inc.'s Solaris operating system for Sun's SPARC-based Unix clustered processors. Amdahl is expected to transfer expertise gained from its 11-year-old UTS mainframe Unix product and has agreed to resell Sun's SPARC-server 1000 and SPARCcenter 2000.

Reacting to the market, Amdahl's anticipated restructuring is yet another attempt to bring its business model in line with reduced profitability in the mainframe market, analysts said. "Amdahl played up being a hardware company, while the industry kept shifting its asset structure to software and services," said Bob Djurdjetic, president of Annex Research in Phoenix. "They, like IBM, hung on to the same model of success they enjoyed in the past, hoping it would last forever."

Meanwhile, Amdahl has to match IBM's anticipated announcement of CMOS-based mainframes, which will ship in 1994. Amdahl will therefore have to rely more heavily on off-the-shelf component parts, such as CMOS and RISC chips, as building blocks for the new systems, users and analysts agreed. "I'd say Amdahl has to position themselves to provide the MIPS in a commodity marketplace at the lowest possible cost," said Bob Ganthier, a capacity planner at Lucky Store, Inc., a grocery chain in Dublin, Calif., that has 3600 bytes of Amdahl disk drive capacity.

Many users at large Amdahl sites seemed sympathetic. "We see it as a good sign that they are responding to the changed realities [of the mainframe market], just as IBM has," said George Sokol, president of CSR Technology, Inc. in Jacksonville, Fla., which runs a seven-processor Amdahl 5986-M machine.

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Novell transfers Unix trademark to X/Open

By Jean S. Bozman
BOSTON, N.J.

Unix users were heartened by Novell, Inc.'s transfer last week of the Unix trademark to X/Open Co., a move designed to certify open systems conformity through the use of a common set of 1,170 application programming interfaces (API). But some users were concerned that incompatibilities among Unix operating systems could persist because vendors will be allowed to innovate above and below the API layer.

Indeed, the new rules of the road for Unix will not erase the various "flavors" of Unix, which make IBM's AIX different from Sun's Solaris, for example (CW, Oct. 11). "The name Unix will now mean standards conformance," explained X/Open spokesman Jeff Hansen. "Those products are going to be compatible; they're not going to be identical."

Not until next year

But a second catch is that X/Open's 1170 APIs will not be in place until late 1994. That means there will be an "interim" period until X/Open completes a Spec 1170 test suite, vendors confirmed.

And during this period, vendors' operating systems must comply with several standards: the Unix System V Interface Definition (SVI2) Release 2.0, XPG 3 or XPG 4; and source code from Unix System Laboratories, Inc. (USL) in Unix System 3.5 or Unix System 5.4. X/Open said.

"We expect that it will be late 1994 when

Business goals

Vendors will have the option of selling their software under the Unix trademark name — including kernel products — or continuing to use other names for their software. Vendors will also have the option of selling their software under the X/Open trademark name.

X/Open has all the test suites and will be able to validate conformance to the [Unix] brand through testing," said Bill Filp, president of IBM's Advanced Workstations and Systems unit in Somers, N.Y.

And even when the standard API layer comes to life, vendors will be able to replace their present Unix "kernels" with microkernels below the API layer and can later add object-oriented utilities over the standard Unix APIs.

Compatibility can be relative, some users noted. "Any move toward standardization is a help," said Randy Robinson, manager of network information services at the NASA Ames Research Center near Mountain View, Calif., "but any change also raises the question of the compatibility and portability of existing [application] code."

Even if Unix standards were to converge, Robinson said he is concerned that older applications — of which he has many — may have to be modified to run under the new and improved Unix operating system.

More APIs needed

"The issue is, what's more important, the definition of the 1,170 APIs or the transfer of the Unix trademark?" asked Ted Haas, director of the Center for Information Technology Integration, an applied research center at the University of Michigan in Ann Arbor, where he builds Unix systems. "I think the 1,170 APIs have got to grow to 2,170 because things will keep on growing. To keep portability, they'll have to keep stretching the agreement."

For example, he noted, Hewlett-Packard Co.'s HPVX has about 4,000 APIs.

However, X/Open has promised to manage the process of enhancing the API set, according to Geoff Morris, the consortium's chief executive officer. "What we're trying to do, as fast as

possible, is get to a coherent, consistent, tested position in the marketplace where Spec 1170 governs the Unix trademark," Morris said.

Still, the common API specification will allow programmers to "write to" the same set of system calls. "You can layer over all those differences in the operating systems, which makes users happy," said Rebel Browne, a former USL executive who is now strategic marketing director at OpenMarket, a Unix systems management software firm in Pleasanton, Calif.

Once a vendor's code is certified to be Unix-compliant, that firm will pay X/Open an as-yet undetermined license fee based on the volume of their Unix product sales.

Users also said they are more interested in a new ease of portability for Unix applications and in the prospect of lowered prices than in the political battles that stalled the Novell-X/Open agreement for weeks (CW, Sept. 27).

Many users are clearly optimistic that the Unix trademark will simplify the purchase of packaged applications. "We can expect lower costs and better portability. Interoperability and scalability," said Robert Chew, section chief of advanced information technologies at EG&G, Inc., a federal contractor for the Department of Transportation in Cambridge, Mass. The new Unix specifications may affect software vendors first, allowing them to port applications to various flavors of Unix more easily, some users said.

"It'll probably have a trickle-down effect," said Jim Silkenstheuer, director of systems development at Kodak's Varsity Food Stores, Inc. in Tampa, Fla., which has dozens of Sun Microsystems, Inc. servers. "The third-party developer can reduce their development staff and lower their prices, or add more features and functions to the software."

DMI

CONTINUED FROM PAGE 1

demonstration in San Francisco, and that have committed to implementing DMI in their products, include Novell, Inc., Digital Equipment Corp., Hewlett-Packard Co., IBM, Intel Corp., Microsoft Corp., SunConnect and SynOptics Communications, Inc.

"To date, this is the most thoughtful and cooperative effort to solving desktop management issues I have seen," said Timothy Foley, executive director of the Personal Computer Assets Management Institute, a user organization in Rochester, N.Y. "Financial managers are waking up to realize they don't have a handle on their PC assets."

For example, because of poor tracking, last year U.S. corporations spent as much as \$1.7 billion purchasing software they already owned, according to Foley.

Delaying the battle

DMI has already forestalled protocol wars among HP and other printer vendors, said Craig Burton, president of the Burton Group, Inc. in Salt Lake City. In May, the vendors were at odds over a standard bidirectional printing protocol that, among other things, will allow printers to inform users when paper is

out. Two weeks ago, the vendors announced that they had resolved their differences using DMI. "This moved network printing ahead by at least a couple of years," Burton said.

A key part of DMI is the Management Information File (MIF), a database of relevant status and configuration information generated by each hardware and software component, peripheral and PC.

DMI-compliant management applications running on a management console, such as HP's OpenView, can then gather this information from the desktop system to do inventory management, accounting or real-time diagnostics.

For example, Novell will demonstrate this week its NetWare Management System Version 2.0 retrofitting MIF information using the Simple Network Management Protocol agent that comes with Novell's NetWare agent at the desktop, said Steve Dauber, Novell's network management

product manager. "We're taking responsibility for [DMI-compliant applications] being able to retrieve information from NetWare desktops."

Still to come at the NDMS console, which will allow management applications to process the MIF data, Dauber said. The initial NDMS 2.0 release will only be able to display MIF data generically.

Novell will also incorporate the DMTF standard into the inventory management service that will be part of its upcoming NetWare Distributed Management System (NDMS), Dauber said. NDMS is slated for release in the next three to 12 months (CW, Oct. 11).

Microsoft Corp. will also demonstrate its desktop management system this week. Hercules will be "DMI-enabled" when it ships sometime in the first half of 1994, a Microsoft spokesman said. In addition, Microsoft will incorpo-

rate DMI MIF support into its DOS, Windows and NT desktop products sometime after DMI moves out of beta testing and Microsoft has tested the interface, he added.

On the device side, LAN vendors, including 3Com Corp., Standard Microsystems Corp., Intel Corp., IBM and Eagle Computer, Inc., will demonstrate DMI in their adapters. They have agreed to send a common set of adapter-specific information to the MIF.

Left out of the party

One user concern is that existing devices will not be able to participate in the DMI-compliant applications. "We would never be able to retrofit an installation," said Michael Tucker, state systems integrator at the Office of the State Controller in Raleigh, N.C.

However, Intel will demonstrate a retrofit program that will enable users to scan their existing, non-DMI compliant desktop hardware and software and load the information into an MIF, an Intel spokesman said.

Intel plans to make all of its networking products DMI-compliant in their next major releases, most of which will be released in the second quarter of 1994, he added.

A DMI-compliant version of Intel's LANdesk network management platform is due out in the same time frame.



Source: Desktop Management Task Force



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Microsoft to tear down PC app walls

Gates to expound on vision of borderless application use at Office 4.0 debut

By Michael Vizard
NEW YORK

Microsoft Corp. Chairman Bill Gates will this week use the launch of Office 4.0 to articulate a vision of PC applications where the walls between applications will no longer effectively exist.

Using Version 2.0 of Microsoft's Object Linking and Embedding (OLE) interface, Gates will demonstrate the ability to work directly with an Excel spreadsheet from within a Word document, thereby heralding a forthcoming generation of PC applications that were designed to simplify the creation of compound documents.

But while information systems directors generally applauded the direction Microsoft is taking, they noted that Gates' vision is still in the early stages of deployment. "We're desperately waiting for more applications to take advantage of OLE 2.0," said Peter Pollack, director of technology at ShowTime Network, Inc., a subsidiary of Viacom Corp. in New York that

intends to integrate off-the-shelf applications with custom applications it builds.

"A lot of the functions we need in our applications are already in other products. So why reinvent the wheel when you can use OLE to integrate them?" Pollack asked.

Silent pickings
In fact, the only OLE 2.0 application available from Microsoft next week will be Word 6.0 (see story page 35). Two others

Corporate developers, meanwhile, are still waiting for Microsoft to deliver a more robust set of tools for working with OLE 2.0, which is expected to begin with support for OLE 2.0 in the form of Microsoft's Foundation Class Libraries later this year. This will give developers a set of prepackaged OLE applications that they can tailor for their specific applications.

"It will be pretty hard for developers to come up with a better set of OLE 2.0 applications on their own nickel," said Roger Heinen, Microsoft senior vice president at the database and development tools division. All Microsoft tools will support OLE 2.0 within a year, according to Heinen.

To facilitate application integration, Microsoft will also announce this week that it has added a Microsoft Office Manager (MOM) facility to Office. MOM will function essentially as a program manager or "home base" for end users as they navigate through Microsoft and third-party applications integrated with the suite using OLE 2.0.

At least one beta user of Excel 5.0 and Word 6.0 reported that he has already

made significant progress in terms of integrating Excel and Word with custom applications using OLE 2.0.

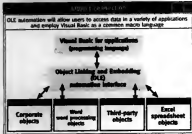
"OLE 2.0 will have a substantial impact in terms of taking integration to a whole new level," said Roy Westerstrom,

a managing partner at Micro Modeling Associates, Inc., an Office 4.0 beta site in New York that has created more than 800 applications for Fortune 1,000 companies.

End-user view
From the end user's perspective, Westerstrom said OLE's support for in-place editing will allow for the creation of compound documents through the integration of Word and Excel objects.

"From within Excel, you'll be able to call up Word and use the full power of a word processor from within your spreadsheet. This will make publishing reports much easier," he said.

Westerstrom added that developers will be able to link applications by working directly with the object associated with Visual Basic, which will serve as a common macro language across Microsoft applications. "You won't have to work with arcane [Dynamic Data Exchange] protocols," he said.



er members of the suite, Excel 6.0 and PowerPoint 4.0, will arrive with OLE 2.0 support by year's end, but the majority of applications from Microsoft and third parties, including Lotus Development Corp. and Borland International, Inc., will not support OLE 2.0 until next year.

Microsoft plans database unity

CONTINUED FROM PAGE 1

Microsoft's senior vice president at the database and development tools division.

He added that the project would be implemented in conjunction with the company's forthcoming Cairo object-oriented operating system.

Application developers will require an object-oriented repository to give them a tool for managing and tracking objects used to create applications for object-oriented systems, noted Curt Monash, president of Monash Information Services, Inc. in New York.

According to Heinen, Microsoft's repository will sit on top of the company's unified database engine, the elements of which will become more object-oriented as the company moves to-

ward Cairo. The need for Microsoft to present a more cohesive database strategy, coupled with the need to give developers a development system that will simplify working with object-oriented programming, is expected to make these efforts a top priority.

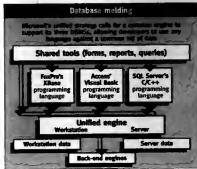
What's ahead

- FoxPro development projects for the next 12 months:
- Object-oriented language extensions.
- Open Database Connectivity support.
- VBA implementation.
- Support for Microsoft distributed query processor.
- Enhanced SQL support, including updates and outer joins.
- Developer-oriented windows.
- Support for mixed data types.

Object-oriented
According to Monash, most existing repositories, such as the one marketed by Intersearch, Inc., are already based on an object-oriented database.

As such, he said he expects Microsoft and other vendors to adopt object-oriented databases as they move to object-oriented programming models.

Once Microsoft builds its unified engine, each language will be opti-



DB Chart: Dave Marshall

mized for a particular set of services in the role, according to Roger McAniff, general manager at Microsoft's Fox business unit.

As such, Visual Basic's primary use will be to develop Windows applications, FoxPro will serve as the tool for creating large-scale PC database applications, and C/C++ will be used for creating the objects that will be manipulated by Visual Basic, XBase and other higher-level languages.

To enhance FoxPro's role in this

FoxPro adds-ins

Last week Microsoft added the workgroup extensions to FoxPro in the form of support for Messaging Application Programming Interface and Scheduler, which developers will use to distribute updates of FoxPro applications.

effort, during the next 12 months Microsoft will concentrate on adding support for event-driven programming to FoxPro, link the XBase implementation in FoxPro to Version 2.0 of the Object Linking and Embedding interface and add object-oriented extensions to its XBase language, according to David Fulton, Microsoft's vice president for database products (see box left).

Competitors' plans

In contrast, Borland International, Inc. is deploying Base IV for Windows in the first half of next year with a similar set of features, including object-oriented extensions to its XBase language (CW, Oct. 4).

Thus far, Borland has not deployed a dBase for Windows offering, while Microsoft has been marketing what is essentially a port of its FoxPro for DOS implementation running on top of Windows.

Also competing in the XBase market is Computer Associates International, Inc. in Iosco, N.Y., which markets the Clipper database.

See the CW Guide to PC Databases, which begins on page 117.

Executives: Where's the IS payback?

By Joseph Maggita

Bad news, information systems managers: There is an 80% chance your boss and peers think you and your information technology ought to be delivering more oomph.

An Andersen Consulting survey of 800 senior executives from 220 Fortune 1,000 firms released last week found surprisingly low satisfaction with returns on corporate technology investments, especially among manufacturing heads and financial executives (see chart page 1). Overall, a staggering 81% of those polled ranked their organization's payback on technology spending as "minimal" or "average."

What's IT worth?

The results once again bring into the spotlight the existential question haunting every organization that uses computers: Is the roughly \$200 billion spent yearly on information technology and services worth it?

"How serious is it? [Executives] stay at their present satisfaction level, it will start to get serious," said Jon Lower, senior product manager at Andersen Consulting. "They're not necessarily throwing out [information technology] or going outside to outsource. But they want better control of their assets."

Sculley

CONTINUED FROM PAGE 1

most likely will wind up with an education software outfit or one of the new interactive media ventures that are forming left and right.

"John is interested in the ground where the computer, entertainment and television industries come together," said Pieter Hartsook, who publishes the Macintosh-specific "The Hartsook Letter" in Alameda, Calif. "I think that's where you'll see him wind up."

Although Puette officially left "to pursue other interests," he has come under heat in recent months for lapses in leadership and product strategy (see story page 6). Puette could not be reached for comment.

Puette's responsibilities were assumed by Ian Diery, executive vice president of Apple's Personal Computer Division.

Meanwhile, Apple's fourth-quarter profit was \$2.7 billion, better than analyst expectations but still a 97% drop from the year-earlier period. Revenue rose 21% from the year-earlier period, to \$2.14 billion. Apple attributed the huge profit decline to a "significant" reduction in gross margins, which were 25.7% during the fourth quarter vs. 42.7% in the year-earlier period.

Separately, Apple's downcast stock rose \$4 following word of Sculley's departure and was trading at 27 1/2 at midday Friday.

Andrew McKenna, senior vice president of information services for Atlanta-based Home Depot, Inc., was one of the lucky ones. When a key multimillion-dollar order and payment system delivered superb performance and had to be shut down in a matter of weeks, IS had to face dissatisfied corporate management.

"We had a very straightforward con-

versation," McKenna said. "We told them we screwed up and that we'd fix it." Two and a half years later, the new version of the IBM ES/9000-based system serves 230 Home Depot stores.

Observers cited several major reasons for the much lower payoffs reported in the Andersen report.

A big factor is that benefits are seldom

quick, noted Barry Weintraub, chief financial officer at The Port Authority of New York and New Jersey. "You don't see results the next day. It takes retraining of people, customers and suppliers" before benefits can accrue, Weintraub said.

Moreover, payoffs are notably hard to measure, added several other executives, including Jerry Kanter, executive director of Babson College's Center for Information Management Studies in Wellesley, Mass.

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News Shorts

Polycenter tools get flat pricing

Digital Equipment Corp. last week shifted more of its Polycenter system and network management software to a flat-pricing model where license fees cost the same no matter what system is being used. The move from tiered pricing tied to specific hardware will lead to prices increased for software on MicroVAX machines — up to 649.5% in one case — but pricing on higher-end machines is generally being reduced.

Sun reports increased revenue, profits

Sun Microsystems, Inc. reported first-quarter revenue of \$900.5 million, up 12% from the same period one year ago. Net income was \$16.6 million vs. \$4.8 million the year earlier. At the same time, the company said its head count had dropped to 12,700, down about 500 from the end of the fourth quarter. Sun chairman Scott McNealy and other top executives also took a pay cut and a reduction in bonuses.

Thrifty chooses Sequent system

Thrifty Drug Inc., a Pittsburgh-based subsidiary of JC Penney Co., is building a decision-support system valued at more than \$1 million. Sequent Computer Systems, Inc. will provide equipment and system integration services. In addition to a Sequent Symmetry 3000 Model 750, Thrifty will install 160G bytes of disk storage, an Oracle Corp. database and Microsoft Corp.'s Windows PC clients. The Unix-based Sequent machine will use database extracts from the drug retailer's central mainframe, Thrifty executives said.

Legend shows off new architecture

Legend Corp. last week announced a broad strategy for bridging host-based and client/server systems through a suite of systems management products, middleware, application programming interfaces and development tool kits. Cross-Platform Environment (Xpe) pulls together under one architecture a number of initiatives begun in the past three years and is said to provide improved resource management, software development and distribution, troubleshooting, backup and recovery and user administration across heterogeneous environments. The announcement was prompted in part by a spate of bad news last summer that sent Legend's stock price tumbling and prompted users and analysts to charge the company with failing to keep them fully informed of its plans [CW, July 19].

Object standard to be revamped

The Object Management Group (OMG) announced two requests for proposals that will mean major additions to the group's Common Object Request Broker Architecture (Corba) specification. Corba is a standard that allows objects to communicate. The new work will address ways to help determine issues such as which objects are available in a given system; interoperability; and communications initialization. The OMG will only consider commercially available technologies, and replies must be in by Dec. 6.

SHORT TAKES Citibank NA and Lawrence Livermore National Laboratory will collaborate on a three-year project to study advanced computing and communications... AT&T will today introduce its next-generation Hobbitt 9020 chip family. The new lower-power, higher-performance Hobbitts feature different levels of integration and will begin shipping in the first quarter of 1994... Microsoft last week said it will ship Object Linking and Embedding 2.0 support for the Microsoft Foundation Classes (MFC) in December. MFC provides class libraries that streamline the arcane processes of Windows development.

Telco, cable pact has IS angle

Bell Atlantic/TCI deal could pave way to 'information highway'

By Ellis Bookar

Last week's proposed merger between Bell Atlantic Corp. and the world's biggest cable operator, Tele-Communications, Inc., could hasten the delivery of video dial tone, wide-area multimedia services and other pieces of the "information highway" to U.S. corporations.

Even if the merged company initially targets consumer services, as many expect, it will have an important downstream effect on business users, despite the fact that many office parks and downtown areas already have access to a variety of high-speed local and long-distance networks.

The right mix

Industry analysts and phone companies alike have argued over the years that the wide-scale deployment of broadband technologies in the U.S. will only occur if entertainment and "infotainment" interactive services are part of the mix. Business applications for such networks, while important, are not enough to fund their creation.

"In order to fully deploy broadband [networks] to the curb, to support things like telecommuting, you need the economic justification," said Steven A. Taylor,

president of Distributed Networking Associates, a consultancy in Greensboro, N.C. That justification, he said, comes from entertainment services such as digital on-demand video.

Once this broadband infrastructure is in place, Taylor said, business services are likely to follow. "Most people in business make telephone calls from home, and we'd feel very hampered if we couldn't," he said.

Taylor and others suggested that this infrastructure will be a boon to home-based businesses and telecommuters by allowing them to link up with a LAN interconnection at 10M bit/sec, for instance.

A Bell Atlantic spokesman agreed. "Once you have that [network] in place, it's all ones and zeros, whether it's a movie, a video game or a database access."

Virtually all the biggest network providers have seen the same opportunity. Thus, the proposed Bell Atlantic/Tele-Communications deal is just the latest and largest pairing of a networking and entertainment delivery company.

Up-and-comer

Connecting broadband nets to homes could also have an impact on business by giving it a new and powerful way to deliver information and products to customers. According to Insight Research Corp. in Livingston, N.J., total revenue for all types of cable television services is \$20 billion today, and it will grow 5.5% to \$25 billion by 1995.

By comparison, Insight forecasts that interactive services will grow more than twice as fast, from \$600 million today to \$1.8 billion by 1995, a 19% annual growth rate.

"But no one has written a strategic game plan to take advantage of a broadband, national network," Insight President Robert Rosenberg said.

Meanwhile, Bell Atlantic's letter of intent for Tele-Communications — the value of the deal could exceed \$20 billion — must be reviewed by regulators and the courts. The deal is not expected to be concluded until the second half of 1994.

IBM makes multimedia push

By James Daly

IBM hopes to lessen the cost of bringing multimedia to the masses by next year when it ships software that provides multiple streams of video, audio and animation to the desktop across a client/server network.

The Ultilmedia Server software package, which will be demonstrated at next month's Comdex/Pull '93, will allow OS/2 client applications to store and retrieve multimedia data from the RS/6000 family of servers, according to IBM marketing manager Karl LaWall. Windows and Macintosh clients will also be demonstrated.

IBM said the Ultilmedia Server/6000 package would have a number of business applications, including training and video mail.

Away from the office, multimedia could serve up opportunities in such areas as video-on-demand, movie-on-demand and networked multimedia kiosks.

The Oregon Enterprise Division, for instance, has a pilot in place that allows residents to step up to a kiosk in a shopping center and make queries about job openings or hours how to file for unemployment compensation.

A rising star

Multimedia-based training programs are also in place at companies such as Caterpillar, Inc. as well as at pharmaceutical maker Burroughs Wellcome Co.'s Greenville, N.C., manufacturing facility.

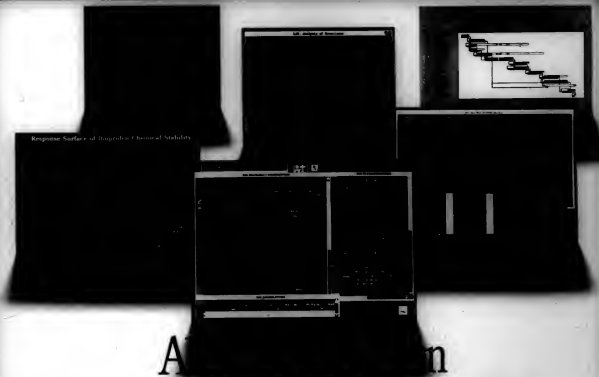
Although multimedia makes tremendous demands on any computer, OS/2's combination of a 32-bit

operating system and preemptive multitasking make it an ideal environment for multimedia.

OS/2 PC clients can access the server-based media as if it were stored in their own workstation, yet receive the benefit of the massive storage of the RS/6000 server.

The server package may also help soften the price of upgrading many machines with multimedia capabilities. "By keeping all this in a central server you minimize the cost," said Steve Deharzett, networking futures architect for Ultilmedia Server. In addition, all the major operating systems now include multimedia hooks.

Prices have not yet been established for the Ultilmedia Server package, but IBM officials said it would likely cost approximately \$10,000.



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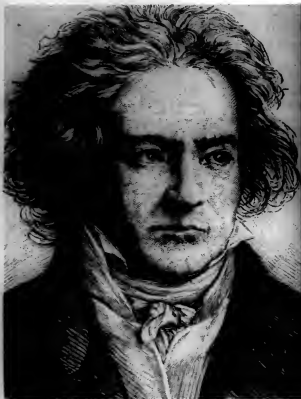


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OS/2 garners sales at NT's expense

By Ed Scanlon

The religious zeal of IBM's Personal Software Products may finally be converting some corporate agencies to OS/2. The firm recently signed deals resulting in the sale of more than 100,000 packages.

During the last six years IBM has found itself sliding uphill against an av-

alanche of DOS and Windows sales by archival Microsoft Corp. Then many corporate users complained either about OS/2's lack of technical capabilities or the dearth of third-party software-compatible products.

But as many large corporate accounts near the end of their months-long testing and evaluation cycle — and find they like

what they see of the mission-critical applications developed under OS/2 E.1 — they are beginning to deploy the operating system in a big way.

Ironically, the availability of OS/2's biggest threat is also enabling some accounts to make the jump to OS/2. The release of Microsoft's Windows NT means that information systems organizations

can now hold it up for direct comparison to OS/2 E.1 and IBM's LAN Server 3.0.

"What is helping IBM is that more can touch, feel and smell [Windows] NT. And they are seeing that [it] has some nice stuff, but it doesn't run all Windows and DOS applications and doesn't run them as fast," said Bob Holmes, manager of evaluation technology at Southern California Gas Co.

Leading the list of corporate accounts that have recently thrown in their lot with OS/2 are Allstate Insurance Co.,

which will display 80,000 copies over three years; Westinghouse, Inc., which signed a deal for 10,000 copies; and State Farm Insurance Co., which signed up for 8,000 copies, sources close to these deals claimed.

Recent agreements for smaller quantities of the products have been signed with Fireman's Fund Insurance (2,500 copies) and The Chase Manhattan Bank NA (1,000 copies), sources said.

Spokespeople for IBM and the named customers declined comment.

Besides Personal Software Products' Microsoft-like missionary fervor, several corporate accounts were swayed by the stability and more complete feature set of OS/2 E.1, the availability of many more application development tools and a conviction that OS/2 can integrate desktop and mainframe applications reliably.

Particularly appealing to several corporate accounts is OS/2 E.1's ability to smoothly integrate internally developed applications in situations involving multiple communications sessions among desktop and host systems.

"There are companies like the Bank of Scotland building applications in the next six months that must maintain three or four communications sessions on, say, mainframes, Sybase servers and local OS/2 servers all at once," said Neil Hill, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Even if IBM is able to sustain this momentum, it still has a long road to travel before building respectable market share against Windows 3.1, Windows NT and now Windows for Workgroups 3.11, which Microsoft is positioning as the successor on the desktop to Windows 3.1 [CW, Oct. 4].

From a marketing standpoint, OS/2 is also being hurt by a lack of OEM bundling deals and a rich enough variety of fully compatible applications from the top 10 or 15 application developers.

And while Personal Software Products has signed deals with Compaq Computer Corp. and AST Research, Inc. to optionally preload OS/2 with their respective systems, the number of users seeking for it has been small, according to sources at several manufacturers.



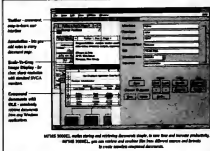
Southern California Gas' Bob Holmes: NT doesn't run Windows and DOS applications as fast.

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Digital puts off Windows NT products

By Craig Stedman
NATYARD, MASS.

Digital Equipment Corp. has postponed plans to introduce by year's end Alpha AXP-based PCs and low-end servers running Microsoft Corp.'s Windows NT operating system and incorporating the Peripheral Component Interconnect (PCI) bus. The company is now looking at late winter/early spring launches.

Digital executives said they decided to bypass the original DECchip 21064 microprocessor in the new PCI systems and wait for the lower-cost 21066, which began sampling last month and is scheduled to go into volume production in the first quarter of 1994.

The move is being taken by analysts as a sign that Digital is throttling back a bit on NT activities while that operating system remains in its infancy.

"Digital is in a mode now where they need shippable products that they can

generate revenue on," said Charlie Robbins, an analyst at the Aberdeen Group consulting firm in Boston. "It's hard to be NT-driven when you're dealing with a product that's still moving around."

William Milton Jr., a securities analyst at Brown Brothers Harriman & Co. in New York, said Digital executives talked about Windows NT "only in terms of the longer-term outlook" at a recent corporate strategy briefing.

Even so, Digital last week insisted that it is not backing off its commitment to Windows NT in any way. However, Jesse Lipson, vice president of the company's Windows NT program, noted that NT-related revenue is not expected to be "a significant part of Digital's mix" until its 1995 fiscal year, which starts in July 1995.

Coming this fall
The firm's Alpha-based NT product line currently consists of the DECchip AXP 150 desktop system, which starts at \$6,795. Digital had said in May that a low-profile desktop machine and a second desktop model, both equipped with the PCI bus, would be introduced this fall.

Server versions were supposed to perform in the class of the company's DEC 3000 systems for DEC OSP/1 and OpenVMS.

But William Denmeer, vice president of the Computer Systems Group, said the plans were changed to take advantage of the 21066's lower cost and its built-in PCI interface.

Dennis Schneider, director of Windows NT marketing for Digital, said 21066-

based NT systems are likely to be demonstrated at Comdex/Fall '93 next month but will not ship for another three to four months. The company is "studying" a price cut on the DECchip AXP 150 as a result of the change in shipment plans, he added.

The Windows NT servers, due out in six to nine months, are expected to sup-

port up to four processors and go up at least to the DEC 4000 hardware level. Digital executives said Windows NT support should be extended across the full Alpha AXP line within 12 to 15 months.

Raymond Sasso, chief information officer at J. R. Simplot Co., a frozen potato processor in Boise, Idaho, said he was hoping Digital would "be a lot more ag-

gressive" in pushing NT systems. J. R. Simplot wants to be able to start moving to Alpha-based Windows NT servers next year, "but whether those expectations will be met remains to be seen," Sasso said.

However, Alan Connolly, senior network specialist at Pacific Gas & Electric Co. in San Francisco, said NT is not robust or mature enough to be considered "for anything serious" beyond the desktop at this point.

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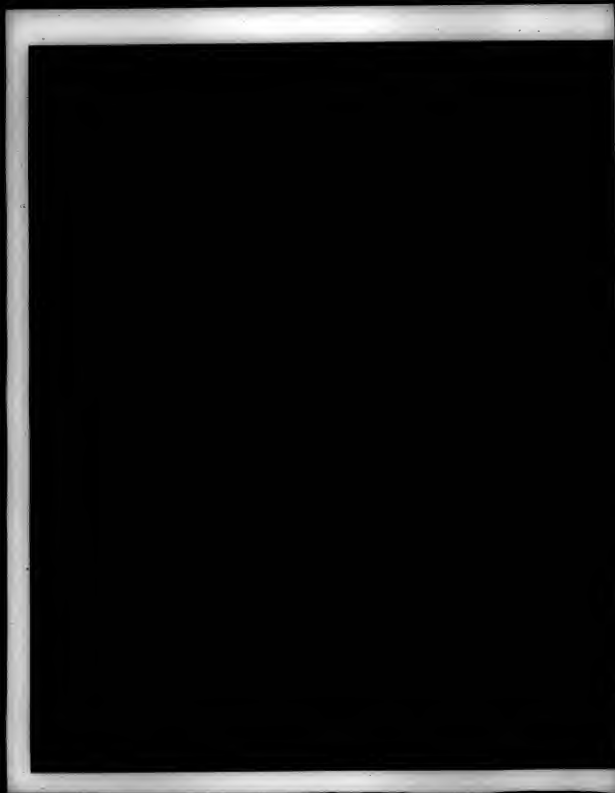
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AVAILABILITY



MANAGEMENT

Client/server costs more than expected

LAN servers yield benefits, but expense reduction is not one of them

By Johanna Ambrosio
BOSTON, MA

If you are thinking of ditching your mainframe and moving to LAN servers to save money, think again. By the time you are finished, the exercise will probably wind up costing you as much as 50% more than if you had left things alone.

This was one of the main messages coming out of the recent Gartner Group Symposium, the Stamford, Conn., consulting firm's annual customer conference. Some 1,200 attendees packed in to hear Gartner Group, Inc.'s prognostications, among them that if it is OK to "just say no" to client/server computing, Gartner Group has been curtailing its clients on client/server for more than a year now.

"We estimate that client/server costs 150% of a mainframe-centric architecture," said Michael Braude, Gartner Group's senior vice president. "Change is not necessarily progress, and it's up to you whether you jump or not."

Hidden costs

There are benefits to adopting a client/server architecture—most especially increased flexibility and improved functionality. But even though the hardware and software client/server

components are less expensive than their mainframe equivalents, the real "gotcha" is in service, support and administration.

For example, with data center automation, a few experts can support several thousand mainframe users—not the case in client/server computing. For every 35 users on a client/server system,



Source: Gartner Group, Inc., Stamford, Conn.

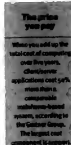
company needs one support person—at a cost that can run three times higher than the price of the hardware and software. In the past 10 years, Gartner estimates that users have spent more than \$400 billion on desktop hardware and software and another \$1.6 trillion on support and administration for those systems.

With mainframe computing, the largest costs are associated with the equipment itself, but those costs are written off over the course of the application's five-year life span. In contrast, the largest client/server costs are for the people needed—and those costs do not decrease over time, unlike those for equipment.

The issue of the price tag in client/server computing struck chords with many attendees, as well as with others who are in the trenches trying to make the whole thing work. "It is a myth that client/server is a panacea for all your ills," said Anish Mahini, managing director at



Household Financial's Susan Swanson: Company is 'happy' with the application



Banker's Trust Co. in New York. "The start-up costs are higher."

Sometimes other costs arise, as they did for Household Financial Network in Northbrook, Ill. The company's client/server funds-tracking application is implemented on three servers running Oracle Corp.'s database management system, with some 50 Intel Corp. 386-based clients attached.

Adding horsepower

Now, however, the company is planning to upgrade to 486-based PCs "to really do it right," said Susan Swanson, business systems consultant. "When we first started deploying this two-and-a-half year ago, the 486 just wasn't there. Now we need the additional horsepower" to accommodate the features that Household has added to the software.

Despite this, she said, the company is "happy" with the choices it has made and with the application.

Instead of moving to client/server because, as Braude said, "your organization is forcing you into it," other analysts suggested allowing the application to guide the platform. Factors to consider include how many processing will need take place at the mainframe vs. just grabbing some data occasionally and doing the bulk of the crunching at the user's desktop, and how many users will need to be on the system.

Costs or not, many firms are committed to the client/server way of life. "The cost surveys may be accurate, but they do not reflect the reality of features and functions I'm able to offer users on the new systems," said A. D. Wayt, director of North American production services at Kellogg Co. in Battle Creek, Mich. "Client/server is already added value, at a cost."

States to tap EDI tax network

CONTINUED FROM PAGE 1

"In the millions" and declined further comment because details of the contract are still under negotiation.

However, states collectively receive a rough total of \$25 million tax returns of all types per year, and there is the potential for as many as \$.6 billion EDI transactions per year among banks, taxpayers and state revenue agencies. As a result, the value of the contract could be "huge," said Jonathan Lyon, administrator of TaxNet.

The advantages for participating states and corporations include the traditional EDI goodies, such as reduced costs associated with handling and mailing paper forms and reduced errors caused by rekeying information.

Standard forms

Additionally, corporate taxpayers can expect to receive more timely returns and electronic notices that the tax return

has been received. For software preparers, the standardized format means they will not have to use different paper forms or software for every state in which they file taxes.

Network, network

While state governments are preparing to receive EDI-based tax forms, a parallel effort is under way at the federal level. The IRS recently called for a public consortium to help determine the characteristics of a federal EDI tax-filing network.

While 33 states either allow or mandate electronic tax payments, and Florida and Texas allow some electronic filing, TaxNet is unique because it will let corporations send all their state tax information to a central site using standard forms, Lyon said. TaxNet also allows corporations to attach payment authorization to the electronic forms.

Two states, South Carolina and Nebraska, plan to begin using TaxNet Jan. 1. Others, including Colorado, Minnesota, New Mexico, North Dakota and Oklahoma, plan to join in sometime next year, Lyon said.

Users contacted said the TaxNet state tax filing services could be logical additions to their EDI infrastructures.

"We use EDI with our customers for items such as freight billing, and custom-

ers pay their bills via electronic funds transfer, so we already recognize the benefit of EDI," said Ron Edwards, vice president at Builders Transport, Inc., a truckload transportation company based in Camden, S.C., with roughly 2,400 employees.

"Most large companies already implement EDI, so to implement another form would require a trivial amount of effort," agreed Steve Glasgow, director of the messaging service at BNS Strategic Decisions in Norwell, Mass.

Outstanding concerns

What remains to be worked out is whether TaxNet should use encryption technology and, if so, which technology to use. Another outstanding issue is how to resolve digital requirements. One option is using digital signatures. The Internal Revenue Service is considering Digital Signature Standard (DSS) for use in federal tax returns, and when DSS is adopted, it would make sense for the state governments to use the standard as well, Lyon said.

A temporary measure that states use is to require corporations' tax officers to use a paper-based signature with the state each filing year, according to Bob Barr, vice president of electronic services at Chipsett, Inc. in San Diego. Barr is one of the authors of the original FTA


request for proposals.

Despite those drawbacks, interest in the EDI tax filing is said to be high. For example, in South Carolina, more than 70 corporations showed up for a seminar held recently by the Department of Revenue to gauge interest, said Terry Garber, manager of technical service at the department.

In January, South Carolina will begin using TaxNet with about 100 of its largest companies. The department will use its IBM 3090 mainframe for batch jobs and will use a dial-up line access, the TaxNet VAN. From there, the state will download returns from an EDI mailbox maintained at EDS. Initially, the state will also let EDS provide the translation services, Garber said.

"EDI will allow our tax agents to concentrate on more important things than copying forms," Garber said. She predicted that the state will expand the service to smaller businesses and individuals at an unspecified date.

Ultimately, the added convenience of electronic tax filing may be a requirement, not an option. In Minnesota, this already is the case. As of January 1, 1994, businesses who pay more than \$120,000 per year and file a no-remit return will be required by law to file electronically using EDI, fax or Touch-Tone telephones, Lyon said.



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Private insurers

The other night I was at home enduring what most would probably consider one of the painful necessities of modern life—I was meeting with an insurance salesman. He was a perfect gentleman, well informed, etc. But it's just not something most people enjoy doing.

Anyway, he was in the middle of comparing my existing auto insurance policies with those his company could offer when he told me that my current insurer had apparently miscalculated the safe driver credits I had coming to me. The fewer accidents or moving violations you have in Massachusetts, the more credits you accumulate and the smaller your premiums.

"Says here you're a Level 15 and you should really be an 11," he said. "You haven't had any accidents or speeding tickets since..."

—Hey, how the heck do you know that stuff, I asked him. After all, I'd just met him for the first time since speaking with him on the phone. He shifted a little uncomfortably and said, "Well, to tell you the truth, we just pulled your records down off the computer."

Oh. The computer. I recalled the ritual of going to confession when I was younger and telling the priest all my sins. I had to because we were taught there was a supernatural being who knew everything about us, so why lie. Today, apparently, there is the computer.

Don't get me wrong. I'm glad the agent did his homework and eventually quoted me a lower premium. But I sure felt uncomfortable at the ease with which someone accessed records I thought were between me and the commonwealth of Massachusetts.

So it shouldn't come as any big surprise that a recent Harris Poll found a majority of adults in the U.S. "very concerned" about confidentiality of computerized records [CW, Oct. 11]. Privacy, Harris found, is a front-burner issue today.

Data privacy is by no means a new issue. For years, various groups have ruled in the halls of Congress against the lack of controls on computerized records. Nothing much has happened, largely because it simply has not been economically expedient to control access to and use of computerized data. Until now.

Because what the Harris poll showed further is that Americans are getting so fed up that they are voting with their wallets, showing a greater willingness to patronize businesses that have adopted policies to safeguard computerized records to some degree.

This is a window of opportunity for IS to fulfill a standing request from corporate management: Make the company more competitive. Take the lead role in demonstrating that data can be protected in a way that makes the consumer feel comfortable. Privacy rights have been deeply branded into the American psyche. Why not turn an emotion-laden issue to your company's advantage, and ultimately to your own advantage as well?

Bill Laberin

Bill Laberin, Editor in Chief



Don't forget SAS

I enjoyed reading your roundup of executive information systems (EIS) vendors' efforts to add SQL interfaces to their products [EIS vendors adopt SQL to push client/server, CW, Sept. 27].

As you might expect, though, I was disappointed that SAS Institute was omitted from the discussion.

International Data Corp.'s own 1992 EIS Survey, published in August 1993, said, "SAS [software] was the second most commonly cited provider of EIS navigational tools. This ranking is impressive considering that SAS/EIS [software] was not commercially available at the time of this study..."

The survey goes on to state that "IDC suspects that these results reflect a combination of [SAS Institute's] traditional strength in the area of data access and reporting and a broad perception by users of what constitutes an EIS. Early signs are that SAS/EIS [software] will do well, particularly within SAS [Institute's] vast customer base consisting of more than 25,000 sites worldwide."

SAS Institute's strong showing in this survey comes as no surprise when one considers that the two major "enhancements" desired by EIS users (and identified in the survey) are cross-platform support (portability, connectivity and interoperability) and data access/integration.

Both enhancements have been hallmarks of the SAS System for many, many years.

W.E. Swain
SAS Institute
Cary, N.C.



The real pitchmen for client/server

Mr. Gillin in his recent editorial "Valley of death" [CW, Sept. 27] stated that "Users are being sold a bill of goods on client/server." I absolutely agree.

Gillin, for the most part, points his finger at hardware and software vendors. To a great extent he may be correct, but vendors are supplying technology to address specific components of the client/server model and many of them provide strong solutions. The

problem is that no one vendor supplies a complete solution for today's client/server needs.

Personally, I point my finger at the trade publications. They have run screaming to client/server because it sells.

At no time did they take a step back and identify the pitfalls that existed; communications issues, scale concerns or even the need to consider security and integrity issues within a distributed environment.

As a vendor, it is our goal to provide strong technical solutions to our customers, and a majority of us do.

As the conscience of the industry, however, it is your responsibility to inform and enlighten these same individuals. Unfortunately it is evident that you have badly missed the mark. A bill of goods has definitely been sold on client/server, but it was generally sold through subscriptions to the computer press.

Michael Creation
SoftLab, Inc.
Atlanta



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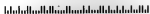
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Forget the diet of high-tech confections

Ted Krum

If your vendors appear distracted by personal digital assistants, multimedia or other tasty, high-tech confections, it's a good time to remind them that conventional commercial applications remain the meat and potatoes of their industry.

Younger vendors looking to knock the stumbling giants, IBM and Digital, into the second tier will not do so by stuffing RISC processors into our pockets, TVs and automobiles. Success will belong to those who win the loyalty of ordinary commercial users by solving their everyday problems and plugging the gaping holes in commercial desktop systems.

Enterprises desperately need to integrate information from sources scattered throughout their organizations, yet PC and workstation users still have no convenient way of exchanging data with preexisting mainframes or on-line data services. Current methods of interaction—terminal emulation and swapping flat ASCII data files—are a terrible drain on productivity. Even the few interface translation tools currently available for common mainframe environments provide a framework for extensive extra development.

Among homogeneous systems, methods for automating routine data flow still come up short. Good tools for work-flow management and version control are very scarce.

Major software firms do an admirable job of integrating the latest operating environment, but they lack the ingenuity to process, spreadsheet and presentation programs. Commercial



computing, however, also relies heavily on software from lower-volume, industry-specific value-added resellers. These developers lack the resources to capitalize on new software technologies so their products have gained little in sales productivity value during the past decade. Client/server and workgroup applications need to be as easy to assemble as Lego blocks before they can make a measurable impact on commercial productivity.

The challenge of absorbing software innovations also extends into more basic areas. For example, most of us still have to live without GUIs and PostScript-style printing for some portion of our work.

Young programmers with the training in

write C++ code to complex APIs tend to flock to the major software houses, which put them to work on high-volume, horizontal applications. Vertically oriented commercial software development therefore remains the province of an older generation of programmers who have never had a chance to upgrade their skills. As demand for even more complex distributed applications grows, this generation gap will grow into a chasm between vendor and customer priorities. To use the words of one commercial developer, "You could make a fortune selling Cobol Windows and [DCE] for DOS."

Unix ideologues might maintain that none of these problems would exist in a world of open standards. Unfortunately this is like saying that Balkan warfare has no place in the new world order; it's a platitude that ignores uncomfortable realities. The computer industry will not be able to sustain double-digit growth unless it expends the effort to drag along its installed base.

The next time your vendor wants to drop in to talk about the information superhighway, tell him to get his priorities straight.



Krum is senior research analyst at BCI International in Stamford, Conn. He has worked as a developer and consultant for 11 years. He can be reached by E-mail at tkrum@net.com.

PowerPC: Another chip choice won't help

FIRE WATCH by John Gantz

If you're thinking the PowerPC will make your life easier, forget it.

In the short run, customers have little to gain as Motorola (and IBM and Apple) take on the Intel microprocessor hegemony. In the long run, you could even lose some ground, unless you have a well-thought-out strategy for deploying multiple platform architectures.

That's not to say that some competition wouldn't be helpful. A strong challenge forced Intel to cut prices on its i486 line by 60% in May 1992; that action produced a fourth-quarter PC price war and the re-engineering of Compaq's PC line, which led to the rejuvenation of the IBM PC.

But it wasn't competitors from Digital's Alpha, Hewlett-Packard's Precision Architecture or MIPS Technologies, Inc.'s R4000 that drove Intel to cut its prices the last time. It was competition from 60086 clone vendors. And another challenge from that quarter—companies such as Advanced Micro Devices and Cyrix—is a lot more likely to be beneficial than the one that involves alternative architectures.

It's true that the PowerPC chip poses the most serious competition Intel has faced yet from a RISC architecture. Early versions are already being positioned: the 601 as a straight

Pentium knockoff; the 603 for portable devices; and the 604x for server and workstation products. And the PowerPC has already shown up in products announced by Apple's and IBM's workstation divisions. The trick is that customers don't really care at all that much about the chips. They care about what software runs on what processor.

Unless Microsoft puts Windows, Chicago and Windows NT onto the PowerPC, Motorola's market share won't change a smidge, even if PowerPC is 60% faster than Pentium, as claimed. Of course, Motorola and IBM might be able to engineer into the PowerPC some of that DOS, Windows and derivative technology to which IBM still has access. Then it would be a lot less obvious why the Intel clone wouldn't hit. And the Intel clone market is already crowded. Either way, Intel isn't likely to feel enough of an impact to offer any big bargains on Pentium.

What you're likely to see over time is most of the major PC vendors—IBM, Compaq, AST, Dell—sticking to Intel and second-tier vendors and workstation vendors, including IBM, offering some PowerPC products. If Motorola is successful, you'll eventually find variants of Windows, Windows NT, Workplace OS and Unix running on both PowerPC and Intel chips. That means, over time, you'll find yourself, for one

reason or another, developing for Windows on Intel, Windows NT on Pentium, Windows on Macintosh and so on...and the range of device drivers, buses, accelerators and development tools and libraries they entail.

It's my guess that any financial advantage you might realize from the mira power of PowerPC over Pentium in one environment, or Pentium over PowerPC in another, will be easily outweighed by the hidden costs of developing for multiple, albeit win-win platforms. We're talking lengthier product evaluations, dedicated staff time sorting out technologies, multiple beta tests and developing multiple GUIs, etc.

In fact, I wouldn't be surprised if, three years hence, we look back on the growing competition in microprocessors much the same way we now look at airline deregulation—a development we could have done without. (See related story page 38.)

Gantz is senior vice president of International Data Corp., where he is responsible for all research and consulting in desktop automation and workgroup and office computing.

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Desktop Computing

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Apple pickings slim on apps

By James Daly
CUPERTINO, CALIF.

Although Apple Computer, Inc. is working with hundreds of software developers to build applications for its upcoming PowerPC-based machines, do not expect many to take immediate advantage of the speedy RISC chip. Fewer than a dozen native applications are expected to be available when the first PowerPC-based Macintosh ships in March.

Apple officials said that today's Macintosh applications should run without modification on PowerPC, but the real advantages of the technology will be with applications that exploit the RISC performance. Older applications employing emulation code could run as much as 75% slower than those running native PowerPC code — akin to driving a sports car with a speed regulator.

"There could be a pretty big difference," said Apple spokesperson Betty Taylor. "But native applications should really fly."

Three months before the January launch of the first PowerPC-based Macintosh, only 11 vendors have committed to providing native applications: Adobe Systems, Inc., Actian, Inc., Aldus Corp., Claris Corp., Deneba Software, Frame Technology Corp., Insignia Systems, Inc., Microsoft Corp., Quark, Inc., Special International and WordPerfect Corp.

Some users are willing to give Apple more time. "Obviously, we'd like to see as many native apps as possible," said Mike Bailey, a systems integrator at Lockheed Missiles and Space Co. in Sunnyvale, Calif. "But if they're not out right

away, I'd expect to see many more coming" by the end of 1994.

Apple is lobbying furiously to increase developer support for PowerPC. "There's still a lot to be determined," said Steven Ekenanzi, an analyst at research house Alex. Brown & Sons, Inc. in New York. "Most of the hard-core development

Side by side

	1994	1995	1996
RISC 601 (low-end/midrange)	70	1,000	1,700
RISC 601 (high-end/desktop)	100	275	125
RISC 601 (high-end servers/workstations)	95	390	500
RISC 601 (low-cost portables)	0	250	600
Total Apple RISC CPU shipments	225	1,715	2,925

Source: "The Hardware Letter," Alameda, Calif.

IBM Corp. News Bureau

work gets done in the last three to six months, they're still a lot of race to be run."

But for many companies, it comes down to wait-and-see economies.

"It's a matter of resources, not a lack of desire," said Mike Apple, page 40

Microsoft counters with Word 6.0

By Michael Vizard
NEW YORK

Microsoft Corp. this week plans to lead its overall drive to deliver its next generation of applications for its Office suite with the announcement of Word 6.0 of its Word word processing package.

Slated to become available about two weeks after the release of Version 6.0 of WordPerfect Corp.'s namesake word processing software, which shipped earlier this month, the latest version of Word is expected to up the ante in the hotly contested war of words between the two leading providers of word processing software.

Initial reaction to the latest version of Word among beta testers has been generally positive, which may serve to make it difficult for WordPerfect to regain market share if it lost to Microsoft after its initial faulty thrust into the Windows arena last year.

"Everything on my wish list was taken care of, and everything seems to work," said John Welser, a technical writer at Indus Group, Inc., a utility software manufacturer in San Francisco.

"The nice thing is that it's not a jarring change. It's a smooth transition," added Daniel Willis, a lead analyst at SM Co. in St. Paul, Minn.

Sticking with Word

Even users who had previously switched from WordPerfect's word processing package to Microsoft Word are reporting that they are still not inclined to return.

"No matter what we did, we figured that we were facing a

major learning curve leaving WordPerfect on DOS, so when we looked at other Microsoft products like Excel, PowerPoint and PowerPoint, we decided to go for the whole suite," said Mark Flannery, information systems manager at MBS, Inc., a seed company in Ames, Iowa.

A key feature of Word 6.0 is a set of agents that automate specific tasks, including an AutoCorrect agent that automatically corrects misspelled words without requiring a user to employ a spellchecker directly.

Also, an AutoFormat agent formats a document according to 20 format styles located in a style directory, and an AutoSelect feature allows users to select text starting from the middle of a word.

Word up

Currently, there are more than 10 million users of Word worldwide, including more than 1 million users who have switched from WordPerfect. In addition, Microsoft noted that more than 60% of Word sales came through its sales offering.

Wizards and other features

Also included are Wizards that interactively guide users through the creation of a document, support for electronic forms and full support for Version 2.0 of the Object Linking and Embedding interface, which was designed to allow Word to seamlessly integrate data with other Windows applications.

In addition, Word 6.0 includes a multiple-page view that allows users to preview a document, an AutoTable Format agent, customizable tool bars and menus and support for an Undo command.

Word 6.0 also adds improved WordPerfect conversion facilities, which are intended to help facilitate migration to Word. But whether the use of the facility — along with proactive agents and tight integration with other Microsoft applications — will be enough to keep the word processing momentum running in favor of Microsoft in the face of largely loyal WordPerfect customers remains to be seen.

PC data sharing made easier

By Michael Fitzgerald
MOUNTAINVIEW, CALIF.

Increased use of notebook computing has made keeping files up to date between desktops and portables a dicey issue for corporate users. Nomadic Systems, Inc. recently addressed this problem by shipping SmartSync, a Windows utility that synchronizes files and provides for the sharing of data across multiple PCs.

Users contacted said they liked SmartSync's ability to ensure that files on both corporate desktops and notebooks in the field have the same data.

Features are smarter, too

Nomadic's SmartSync includes features such as security password protection; a Conflict Manager to resolve situations in which, for example, a file has been changed on two PCs between synchronization; and RemoteCopy, which allows users to remotely replicate files from one PC to another.

SmartSync runs on Windows 3.1 in enhanced mode, requires 4M bytes of RAM and 4M bytes of hard disk and costs \$169.95 per copy.

"This whole file synchronization issue is a key need in the mobile computing environment," said Bruce Stephen, director of PC hardware and pricing research at International Data Corp. in Framingham, Mass. "It's an ingenious little utility that actually solves a big problem for us," said Joel Diamond, a SmartSync beta tester and technical director at the Windows User Group Network (Wugnet) in Media, Pa.

"No single individual at Wugnet works on one project where all the files are his domain, and this little utility allows us to make files transferable and update them seamlessly," Diamond said.

Chuck Stegman, an analyst at Dataquest, Inc. in San Jose, Calif., credited Nomadic with developing "a sophisticated piece of technology wonderfully hidden behind a straightforward interface."

Synchronization is key

Enrique Crespo, manager of corporate sales systems at The Torrington Co. in Torrington, Conn., said many users now have both desktops and notebooks, and SmartSync may ease data management issues.

It is a significant time-saver to have to figure out where the latest version of a particular file happens to be, he said.

Crespo added that previous synchronization efforts for PCs have been "cumbersome" and that he would like to get the same kind of software synchronization on his notebooks that he has on Apple Computer, Inc.'s Newton.

Look for synchronization to become a hot item. Microsoft Corp., for one, is known to be working on incorporating data reconciliation and synchronization in its coming All Work for Mobile Computing operating system.

Jeffrey Henning

Apple on the rebound

Looking at Apple's recent history, many information systems managers are concerned about the company's financial stability and long-term prospects.

Their concern is understandable, given Apple's record, which includes product abandonment, haphazard price cuts, uncertain delivery timetables, poor forecasting and layoffs.

Although some customers remain optimistic that Apple will emerge from its travails leaner and more competitive, others worry that it might be headed for the same downhill slide as Commodore.

I don't think the reality is likely to be quite that drastic. Like Commodore, Apple has a proprietary standard in an increasingly open systems world. Unlike Commodore, which dropped from No. 3 in the U.S. PC business in the late 1970s to No. 35 last year, Apple plans to convert its systems software to run on an open platform, the PowerPC, which will be available from several vendors.

Different from Compaq
On the other hand, Apple will not enjoy the kind of rebound that Compaq has seen. True, Apple's position is similar to the one Compaq was in 16 months ago, when it priced its systems too high relative to the rest of the market and had to begin cutting prices. Apple, however, won't be able to build revenue by taking business away from smaller vendors, as Compaq did. Apple has a harder sell into new accounts, since its systems are is-

lands at most sites.

Apple will eventually stabilize, but with smaller market share and a reduced role. The company's transition to openness puts it in the slow lane of the PC business; Compaq, AST and Dell are all in the passing lane as they benefit from the decline of no-name clone vendors. Compaq will pass Apple in the U.S. PC business next year, and AST might pass Apple within three years.

Thrown from the castle

Furthermore, Apple will no longer have its own kingdom but instead will rule over a great duchy in the PowerPC realm. IS managers who have not purchased from Apple in the past will feel more comfortable doing so since PowerPC systems will be available from a few other vendors and because Apple will develop attractive PC hardware and software extensions for Windows. Those who have already committed to the Macintosh will continue to have a healthy upgrade path, as the Mac slowly migrates to the PowerPC architecture.

How reduced a role Apple will wind up

occupying depends on the ability of its new management team to prepare the company to compete in an open systems market. Apple needs to reduce its product families and provide better information about planned products. It needs to make fewer, but more modular, base systems.

Streamlining is the way would make it easier for users to upgrade (thereby minimizing fears of obsolescence) and would enable Apple to manufacture to meet demand.

Apple should also encourage IBM to sell PowerPC systems running Macintosh Application Services to large businesses.

IBM, the epitome of serious computing, has an understanding of large accounts unmatched by Apple and can help grow the overall market for Macintosh compatibles, even at the risk of lost sales of Apple hardware. After all, it is better to have a smaller share of a large pie than a smaller pie.

Henning is a senior industry analyst at IBM Strategic Decisions in Norwell, Mass.

Research made easy with census data

Wesssex puts U.S. Census' short form on CD-ROM; asking price: \$95

By Ellis Bocker

How many Eskimo children under the age of 6 live in Oklahoma City? How answers to this and other demographic puzzles can be researched inexpensively with a product from Wesssex in Winnetka, Ill.

"We feel we have a new paradigm for viewing large amounts of data," said Wesssex founder and President Scott Elliott.

Last fall Wesssex introduced its first product, Pro/Filer Demographics CD, which contains all the raw data from the U.S. Census Bureau's "short form," the Summary Tape File 1A (STF1A).

Although users have been able to get this data directly from the federal government — the bureau sells a version of the STF1A file on 16 CD-ROMs — its \$1,600 price tag has been prohibitive to smaller companies, Elliott said.

Design of data

By comparison, Wesssex's single CD contains the STF1A's 1,200 fields of demographic data — compressed and reorganized — as well as software for navigating this statistical gold mine with English-language menus, all for just \$95.

"We use [Wesssex's] compressed data 50 times more often because it's accessible and easy to use," said John Ball, director of marketing at The Quaker Oats Co. in Chicago.

In the past, Quaker Oats had used the data on the Census Bureau's CD-ROM, which Ball said serves as an arcane database format and requires reference to a 45-page manual. "Most marketing people don't have the skill set needed to manually try and sort this out," he said, adding that the company often farmed out this job to outsiders at "significant" expense. "With Pro/Filer, you can do a simple sort in five to 10 minutes," Ball said.

Another enthusiastic user of the CD is Mark Burnett, president of Burnett Direct, Inc., a Southfield, Mich. list broker and direct-mail marketing consultancy.

"Prior to Wesssex, who the hell could afford it?" asked Burnett, who uses the demographic data to "customize" list seg-

ments from other commercially available databases.

Burnett uses the output of the Wesssex system as fodder for both relational database programs and a PC-based geographic information system (GIS) mapping tool from MapInfo Corp. in Troy, N.Y.

In the case of the query about Eskimo children, for instance, a street map of Oklahoma City could be color-coded to present the results.

Marketing tool

Quaker Oats also uses MapInfo to visualize the Census Bureau data. For instance, marketing department demographers can draw perimeter maps around designated "concentrations" of target consumers, basing the placement of billboards or the broadcast of radio campaigns on these regions.

"It's the availability of this kind of data that is fueling the growth in mapping software," said Bruce Jenkins, vice president of DataTech, Inc., a market research firm in Cambridge, Mass.

DataTech estimated that GIS software revenue topped \$387 million last year, a 19% jump over 1991.

"One of the big bottlenecks to GIS has been the lack of usable, off-the-shelf data," Jenkins said, adding that in the past, this meant that GIS implementations added up to "large-scale, custom affairs."

Pro/Filer produces tables in both delimited ASCII and Borland International, Inc.'s dBase III formats and works with a variety of mapping softwares.

Mapping tools, too

Separately, Wesssex sells US Streets and US Boundaries, data products also on CD-ROM that work with mapping products from MapInfo, AutoCAD, Inc. in San Rafael, Calif., and, as of this month, Environmental Systems Research Institute, Inc. in Redlands, Calif.

This month, Wesssex began selling its second demographic product: a four CD-ROM set containing the 400 bytes of data from the Census Bureau's "long form," the STF2A. The new package costs \$365, and individual disks are priced at \$95.

Geography lesson

Surveys indicate the key technology prospect for many local governments' information systems efforts is the creation of a GIS, or a land information system.

Maps have always been a key tool for government because virtually all the data they manage or oversee — taxes, zoning, school districts, streets and sanitation, public safety — is tied in some way to geography.

Here and there, work is under way to link these discrete systems into governmentwide systems (within cities and municipalities and between state and local governments). These become graphical front ends for all sorts of information.

"There is widespread interest in GIS as an integrating technology," says Ed Crane, a GIS consultant at M. J. Harden Associates, Inc. in Kansas City, Mo., and immediate past president of the Washington-based Urban and Regional Information Systems Association.

According to GIS market research firm DataTech, Inc. in Cambridge, Mass., state and local governments spent \$204 million on GIS in 1992. The total GIS market that year was \$650 million.

Among those that have taken the plunge is San Diego County, which has over 500 or more stations for all police departments in the county and is working to share this information with systems maintained by municipal departments.

"Data sharing between county and municipal governments is not that prevalent now, but it is coming along more and more through GIS," said Wilton L. Orr, professor of public policy and M&I at the Heinz School of Public Policy and Management at Carnegie Mellon University in Pittsburgh. — Ellis Bocker

Low-cost multimedia may become norm

By Michael Fitzgerald

A sudden influx of products suggests that multimedia features such as CD-ROM and sound chips are becoming inexpensive enough that they will soon become a standard feature on notebooks, though perhaps not widely used for a while.

Both hardware and software products are rolling out with multimedia features, all targeted at stand-alone, presentation-oriented uses. Among them are the following:

• **Gold Disk, Inc.** will today announce its Astound multimedia presentation package for the Windows operating environment. With Astound, Gold Disk is trying to break new ground by combining a typical presentation tool with multimedia capabilities.

The program can build presentations ranging from basic bar charts to advanced full-motion and sound extravaganzas. Currently in beta testing, Astound for Windows will cost \$129 for the first 90 days when it becomes generally available at Comdex/Pall '93 next month. The price will then jump to \$209.



Panasonic's CD laptop has a built-in CD-ROM drive and a 10.4-in. active-matrix color screen

• **Panasonic Communications and Systems Co.** recently introduced its CF-V21P, a family of notebooks with a built-in CD-ROM drive and a 10.4-in. active-matrix color screen.

• **Start-up Inex Technologies, Inc.** in Santa Clara, Calif., recently unveiled the Inex 4000 family, which has built-in Business Audio and an ESS3448S sound chip.

The Inex products use the 25-MHz 486SX and also support up to a 200M-byte hard disk and 20M bytes of RAM. Prices will range from \$2,195 for a monochrome version to \$3,595 for an active-matrix color version.

At Comdex, Inex will introduce a cellular data/fax modem option and support for 10Base-T and 3270 emulation, as well as models based on faster chips.

The Gold Disk, Panasonic and Inex announcements follow on the heels of the IBM PC Co.'s new ThinkPad 750 family (CW, Sept. 29), which offers multimedia features in a mainstream notebook.

"As you get more and more PCs based on the standard 486 architecture that can handle these new data types, [multimedia] is just going to become a standard feature," said Tim Bajarina, president of Creative Strategies Research In-

ternational, Inc. in Santa Clara, Calif.

Some users said feature obliquity will play a role.

"We've avoided putting multimedia in [our applications] because of marketplace limitations, but if the features were more prevalent, that would certainly drive it," said Chad Pearce, vice president of systems at Godwin Books &

Dickenson, a benefits consultancy in Philadelphia.

He said that while selling benefits products with a multimedia twist has thus far elicited little interest from clients, using multimedia as a sales presentation tool could make sense.

Users have time to mull over multimedia applications: Panasonic released its

CF-V21P in part to take advantage of the PC Co.'s terrible backlog, but it will not be able to ship its own 10.4-in. active-matrix color version until next month. The company also will not ship the CD-ROM-equipped model until January 1994.

Some models are available. Panasonic has a 25-MHz 486SX-based monochrome notebook that weighs 5.7 pounds. It will support up to a 200M-byte hard drive and 20M bytes of RAM. Pricing ranges from \$2,549 to \$4,599; the CD-ROM is \$499.

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HP 715/33	\$9,990	24.7	\$404
DEC 300L	\$7,920	45.9	\$173
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IBM 990	\$147,900	126.0	\$1,173
HP 160	\$136,530	82.0	\$1,665
DEC 4000/610	\$131,728	94.6	\$1,392

Power for a new age.

IBM

IBM announces upgraded AntiVirus

DOS, OS/2 and Windows will now be protected

By James Daly
SARATOGA HEIGHTS, N.Y.

IBM has announced an enhanced version of its AntiVirus package, which provides a defense against virus attacks in DOS, OS/2 and Windows environments.

IBM AntiVirus 1.05 now probes for, recognizes and disinfects more than 2,000 common and uncommon viruses that may exist in memory or on hard disks.

The company has also added a new integrity checking feature that reportedly

distinguishes activity typical of a virus, such as attempts to conceal its action from the user. The enhancement was designed to eliminate the pesky false alarms that can invade some antivirus products.

An administrative interface that provides custom virus control is available by contract from IBM AntiVirus service.

Using the feature, an administrator can authorize organizationwide use of AntiVirus or ensure central incident management by receiving reports of any virus activity.

The package can also be customized to take specific actions, such as sending messages over the LAN, when a virus is found. This is made possible by protocol-independent LAN support, IBM officials said.

AntiVirus is available for \$29.95.

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OS/2 word processor hits Windows

By Michael Vizard

DeScribe, Inc. last week delivered 16-bit and 32-bit implementations of its namesake word processor for Windows, making the company the only provider of word processing software that runs native on both Windows and OS/2 platforms.

Previously, DeScribe offered 16-bit and 32-bit implementations of its word processing software on OS/2 and a 16-bit Windows implementation. With Release 4.0, the platforms supported now include Microsoft Corp.'s Windows NT and Windows for Workgroups. All the platforms previously supported by DeScribe are in sync with Release 4.0.

According to Allan Katsen, president of DeScribe, key features in Release 4.0 include an improved text input capability, which allows DeScribe to interact with other applications, as well as the ability for DeScribe to run as a subapplication under any custom application manager.

Priced at \$495, the Windows version of DeScribe is available now and includes a free upgrade to the next major release of DeScribe.

The Windows NT version of DeScribe is also priced at \$495 as part of an early release program through which DeScribe will deliver updates to support the still evolving Windows NT operating system free of charge.

Apple pickings slim

CONTINUED FROM PAGE 35

Hopkins, president of Full Moon Software, Inc. in San Jose, Calif. "We have to concentrate on the here and now and sell to the installed base. In the long run, the PowerPC will be the only game in town, and then we'll be over there."

Apple announced the adoption of the PowerPC RISC chip as part of the Apple/IBM/Motorola, Inc. technology alliance formed in October 1991.

What is the performance trade-off? It depends on what sort of applications you run. Number-crunching applications should run at the speed of a 25-MHz, 68030-based Macintosh ICL.

A less computationally demanding application, such as a word processing package, should perform at the speed of the high-end Quadra 600, which runs at a 25-MHz, 68040-based microprocessor. "Native applications should run anywhere from three to five times faster," Taylor said.

Microsoft product manager Don Pickens said the company is planning to bring out its native PowerPC applications of Word and Excel by the first half of the year. "They were the easiest to do," Pickens said. He added that there is "a whole lot of other work going on" to get Microsoft's complete Macintosh applications suite over to the PowerPC.

Over at WordPerfect, engineers use

EcoLogic's Flashport porting tool to port WordPerfect's Assembly code over to C. "The plan is to have WordPerfect 5.0 to run native on the PowerPC around the time it is available," said spokesman Dave Turva. "That's the plan, anyway."

Apple officials said that customers' current investments in Macintosh applications software will be preserved.

"Apple's chief goal is to retain a high degree of compatibility with existing Macintosh applications," Taylor said.

Apple will continue to offer 68020-based Macintosh systems well after the initial introduction of Macintosh on PowerPC. The company also intends to offer upgrades to PowerPC for the Macintosh Centris 610, 650 and 68040 computers, Macintosh IIVX and IIVL, Performa 600 and Quadra 500 and 580AV systems.

DayStar Digital will also provide upgrade cards. Meanwhile, Apple is also optimizing parts of System 7 to achieve better performance on the PowerPC processors. For example, many Macintosh applications spend most of their time calling procedures from the Macintosh Toolbox, a set of system software modules designed to handle common tasks. Apple has modified the Toolbox procedures that take the most computation power (such as QuickDraw routines for on-screen graphics) to take advantage of RISC speed.

Four software Apple, IBM and Motorola are working on their versions of the PowerPC. Additionally, including the ones for the initial midrange and high-end Macintoshes and the new, designed for a 64-bit architecture.

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Interleaf to move to easier, standard GUI

By Michael Vizard
WALTHAM, MASS.

Interleaf, Inc. has announced plans to incorporate The Open Software Foundation's Motif and Microsoft Corp.'s Windows as the graphical user interfaces (GUI) for Version 6.0 of its publishing system.

Currently, the Interleaf publishing system has a proprietary GUI that many users have said is difficult to learn.

"You have to remember that when we designed our GUI, there wasn't anything like a standard graphical interface yet," said David Weinberger, an Interleaf marketing fellow.

User reaction to Interleaf's plans to

move to a standard graphical environment was generally positive. "With Motif, the usability has been significantly improved, and there's a new on-line help system that authors will find very useful. I expect to deploy the Motif version next year," said Richard Maxwell, manager of document information systems at Northern Telecom, Inc. in Nashville.



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According to Maxwell, novice users often found the previous GUI somewhat intimidating. "It had a higher learning curve than other products, but once users became sophisticated, they became more productive using it. Other products have a lower learning curve, but when you try to do more sophisticated things, you run into roadblocks," he said.

Following support for Motif, Interleaf plans to add support for Windows, which will launch the company into more mainstream markets.

To accomplish that effort, Interleaf intends to expose the object technology used to create the Interleaf systems, which are written in LISP, to PC applications such as word processors.

The Motif implementation will be available this quarter; the Windows implementation is slated for first-quarter 1994.

Central support to reduce costs

By Michael Vizard
DALLAS

Software suppliers are finally making a concerted effort to cooperate on multi-vendor support issues. The reason, the skyrocketing cost of supporting customers who cannot pinpoint which vendor is responsible for a particular problem.

To help alleviate this, 14 major hardware, software and LAN suppliers earlier this month pledged to provide one another with mutual technical support in the form of a Technical Support Alliance Network (TSANet).

The alliance includes 3Com Corp., Lotus Development Corp., Apple Computer, Inc., Banyan Systems, Inc., Hewlett-Packard Co., IBM, NetFrame Systems, Inc., Compaq Computer Corp., the State-Cruz Operation, Synopsys Communications, Inc., Standard Microsystems, Inc., Tricord Systems, Inc., Wall Data, Inc. and Novell, Inc.

"Pinpointing hardware problems is easy, but software is much more difficult. It's important to have these vendors, particularly Novell, involved," said Wayne Dunn, a board member for the Microcomputer Managers Association.

On the software vendor side, the cost of providing technical support is overwhelming. "They've seen a 5% increase in the volume of calls over the last year, and call lengths are up 17%," said Bob Johnson, an industry analyst at Dataquest, Inc. in Framingham, Mass.

In fact, a report from the "Soft Letter" newsletter in Watertown, Mass., found that the median cost of software support is about 9% of revenue for PC companies and that the average cost of answering a technical support call is \$3 a minute.

To help reduce these costs, TSANet will set up a central database in Overland Park, Kan., to serve as a resource for help desks. The database will be based on the Notes groupware environment, with each vendor having a Notes implementation at its support site.



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Software

WordPerfect Corp. has introduced WordPerfect 3.0 for Macintosh, a word processing product.

WordPerfect 3.0 enhancements include an equation editor, drag-and-drop text, document preview in Open Dialog,

ruled bars, button bars and tables.

From the button bar, users can access Grammarly 5 and WordPerfect Office 4.0. Features are compatible with updated versions of WordPerfect on other platforms. Support for Apple Computer, Inc.'s System 7 Pro is provided.

According to the Orem, Utah, company, the product runs on any Macintosh with a hard drive. Requirements include 2M bytes (System 6.0.7 or higher) or 4M bytes (System 7) of RAM.

WordPerfect 3.0 for Macintosh costs \$449.

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Shapeware Corp. has announced Visio 2.0, a drag-and-drop drawing program.

Visio 2.0 features context-sensitive pop-up menus, optional stencil views (including icons-only view), double-click actions, dynamic distribution and a tool bar. Improved SmartShapes stencils de-

signed for business and technical users are also included.

Extensive support for Microsoft Corp.'s Object Linking and Embedding (OLE) Version 2.0 is provided, including in-place visual editing, drag and drop across applications and OLE Automation, according to the Seattle company.

Visio 2.0 is available at a special suggested price of \$159. The price will return to \$299 on Jan. 1.

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Hardware

Packard Bell, Inc. has introduced a line of notebook computers that includes a subnotebook and a color and monochrome notebook.

According to the Chatsworth, Calif., company, all the portable feature advanced power-saving management that lengthens battery life up to six hours on some models. The models have PCMCIA Type II slots for connection to an assortment of peripherals such as fax/modems and network adapters.

The Statesman notebooks are 2004-byte, 486-based portables that feature support for an optional numeric coprocessor and an integrated "J" mouse pointing device. The Statesman is available with either a color or monochrome display.

The Diplomat is a 1704-byte monochrome subnotebook that weighs 3.9 pounds, including its battery. This 486-based computer offers an LCD status panel and a front-mounted, detachable, two-button trackball.

For power-saving capabilities, the line meets U.S. Environmental Protection Agency "Energy Star" standards.

Prices start at \$1,500.

► **Packard Bell**
(818) 888-2095

Canon Computer Systems, Inc. has introduced the EJC-600, a Bubble Jet printer.

The 9.9-pound desktop printer produces color on plain paper at resolution of 300 dots per inch.

According to the Costa Mesa, Calif., company, the EJC-600's four print head system delivers throughput faster than other ink-jet products because of the 64 nozzles dedicated to each color (cyan, magenta, yellow and black).


The printer has a compact footprint that measures 13.7 inches wide, 7.6 inches deep and 6.8 inches high.

The EJC-600 ships with Windows 3.0 and L3 drivers and 50 scalable TrueType fonts. It costs \$719.

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Product short

Aurum Software, Inc. has introduced SalesTrac for Windows, a sales automation application for notebook PCs. It features an activity manager, forecasting capabilities, notepad and literature fulfillment. Cost: \$1,595 for a single-user license. Aurum Software, Santa Clara, Calif. (408) 562-8570.



RemoteWare
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in a tiny center seat, in coach, staring blankly at a fly nimbly exploring the OXYGEN PANEL above him. It had come down to a scheduling conflict. One more FREE product seminar, half-day, inevitably had deli sandwiches... potato chips that had gotten too close to the locker dills and goose noogies. Or this junket to clean up yet another set of branch communication difficulties in Opelika, St. Louis, and San Antonio. So the picture of this fly on the ceiling RUBBING ITS FRONT LEGS TOGETHER with an ominous delight didn't have the significance for him

It might have had to be seen that MEANWHILE, BACK AT THE SEMINAR THE REMOTEWARE FOLKS WERE SPINNING COLORED TALES OF SUCCESSFULLY IMPLEMENTED FIELD COMMUNICATIONS SYSTEMS, HOLDING CHARLIE'S TEENY-PEERS FROM COMPETING COMPANIES CAPTIVE WITH THE PROMISE OF THOUSANDS OF FULLY-AUTOMATED, EASY-TO-MANAGE AND UNATTENDED DIAL-UP COMM SESSIONS, AND RIVETING ACCOUNTS OF REAL COMPANIES WITH HUNDREDS OF MOBILE CORPORATE LAPTOPS AND REMOTE BRANCH OFFICES USING CENTRALLY-CREATED AND MANAGED ELECTRONIC FORMS, DOCUMENTS, AND REPORTS, ALL LINKED TO CENTRAL SYSTEMS AND DATABASES, AND ALL HEAVILY SUPPORTED BY INTEGRAL ELECTRONIC SOFTWARE DISTRIBUTION CAPABILITIES! So there were the things Charlie was missing: solutions to

the very problems that had made this one more night away from home a necessity. That, and what actually turned out to be a delicious RemoteWare lunch of pasta salad, FRENCH BAGUETTES with prosciutto and mozzarella, and fresh strawberries.

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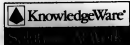


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Bank service firm rewrites check system

By Michael Fitzgerald
WOODBRURY, N.Y.

Tucked under a plain table in a corner of Nationstar's data center here sits the future.

The little table shelters two Compaq Computer Corp. Prosignia 4/66 servers connected to two Storage Dimensions, Inc. LaserStar boxes with more than 90 bytes worth of storage. This is the gear that will allow Nationstar, a New York bank services bureau with some \$2 billion in assets, to stick its toe in the client/server waters in an attempt to improve customer service.

"We're going to bring PCs to these people and allow them to be more responsive to customers," said Theresa A. Doyle, vice president of end-user computing at Nationstar. The chance to bring client/server to Nationstar recently attracted Doyle from a job as vice president of information services at a New York financial services firm.

Her first step, begun soon after she arrived in May, has been to automate the firm's customer services division. The task involves creating new applications and coordinating them with several current unrelated applications, such as New York-based MicroBank Software, Inc.'s StoreFiche microfiche storage application, into a new system.

Reader check retrieval

Doyle's goal with the system is to reduce the amount of time a customer service representative spends hawking with the current microfiche records. Nationstar has long machines here that process thousands of checks per minute, each one photographed and microfiched, to be

viewed on an Eastman Kodak Co.'s Document Imaging Terminal.

The digital images are then stored in a physical warehouse, and customer requests spark a panic of "track that check" that can be painfully slow, particularly if a tape has been misplaced.

Bringing the images on-line should make them easy to retrieve, Doyle said.

Currently, Nationstar programmers are working with developers from MicroBank to write interfaces that will connect various mainframe-based Micro-

teaching them to a Novell, Inc. NetWare LAN running a Prosignia server. The other Prosignia will handle the mainframe interface via a Digital Communications Associates, Inc. IrmuLAN connector.

Doyle estimated that the project, which will cost less than \$1 million to develop, will pay for itself in 18 months through efficiencies allowing fewer employees to handle workloads. She expects the project to go live in December.

"This is going to make us a lot better at what we do, and give us some information that wasn't readily available to us before," said Robert Agliatore, Nationstar's manager of account services. He said representatives should be able to go from handling 145 checks per day to 215.

The project is "absolutely worth the expense. If you know what it takes to be successful, then you have to move toward it, rather than worrying about what it costs," Agliatore said.

For the moment, unplugging the mainframes is not a goal, Doyle said. "We're doing distributed processing. We're not rewriting the mainframe information; we're just bringing it down and getting it out where it's useful," she said.

Over time, Doyle said she expects to add a messaging system that will give the customer service representatives the ability to send check images over an electronic mail network.

Plans are also in place to connect the Woodbury LAN with Nationstar's two offices in downtown New York, as well as those in Buffalo and Utica, N.Y., and Danbury, Conn. A site in Plainville, N.Y., will be added into the Woodbury site. Eventually, customers may also gain access to the system.



Nationstar's Theresa A. Doyle: System should pay for itself in 18 months

Bank software packages, such as those supporting case-action histories and accounting information, with the LAN. Nationstar has integrated its MicroBank software with photo-retrieval software from Antizori Software, Inc. in Atlanta running on IBM's OS/2.1. This connects to the Kodak terminals and allows for quick retrieval of checks.

The company is installing AST Research, Inc. Prestige 4/66 and Bravo 4/66 PCs on customer service desks and at-

Eagle adapters trade certification for price

By Lynda Radosevich
SAN JOSE, CALIF.

Hoping to compete with third-tier vendor pricing and halt declines in its market share, Eagle Technology, Inc. recently dropped the cost and the Novell, Inc.-certified Corp. on a new line of Ethernet adapters.

Called the Eagle line, the products are meant to appeal to price-conscious information systems managers with a taste for Novell networks but who are willing to forego the red, "Yes, it runs with NetWare" packaging.

List prices start at \$20 for a single 15-bit XT/ATbus 10Base-T adapter and

range to \$199 for a 32-bit Extended Industry Standard Architecture (EISA) interface. Pricing drops with volume purchases.

Industry observers said that while Eagle's close association with Novell—which codeveloped Eagle's NE3200 line—was a boon in the past, the corresponding higher price tag for Novell certification and packaging was hurting the company in the commodity Ethernet adapter market.

However, Eagle will continue to develop its Novell certified line of Ethernet adapters aimed at high-end machines, said David Du Puy, vice president of product programs at Eagle.

Other recent Eagle announcements include the following:

- A \$234, 32-bit EISA Ethernet adapter codeveloped with Novell, aimed at 486-based desktop PCs and light-load servers and featuring a shared-memory technique for faster throughput.
- A \$266 wide-area network adapter for connecting NetWare networks over frame-relay links via the recently announced frame-relay interface within Novell's MailProtocol Router software that runs on NetWare servers.
- Ethernet adapters for portable computers with PCMCIA Version 2 slots. The interface card prices start at \$250 per card.

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BRANCH SERVERS

NCR announces OS2-to-NT migration service

Users express different opinions on prospect of changing server platforms

By Thomas Hoffman
DAYTON, OHIO

NCR Corp. recently unveiled a migration service for customers seeking to port their IBM OS/2 applications to the Microsoft Corp. Windows NT platform.

Though NCR had many customers—particularly those in banking and retailing—have expressed interest in moving from OS/2 to NT, users and analysts expressed mixed views on the program. Many consider OS/2 a more stable and feature-rich operating environment than the nascent NT.

"We wouldn't go from OS/2 to NT right now because [OS/2 currently] has more robustness than NT," said M. Lewis Thomas, chief information officer at the University of Miami, which has been testing NT for several months. Tomares, like other users, said he is waiting for NT to mature before integrating it into the university's enterprise.

The migration vendor, aimed primarily at users of NCR's Intel Corp.-based System 3000 servers, will likely be a tough sell to ardent OS/2 shops, such as

Federal Kemper Insurance Co. in Decatur, Ill. Keith Seivers, vice president and corporate treasurer at Federal Kemper, said his company has been committed to OS/2 since 1982 to run its policy services system.

One stop with IBM

Besides, Seivers said, his company has historically experienced problems whenever it has tried to integrate non-IBM software into its enterprise, and it prefers to do one-stop shopping with IBM for its operating systems, databases and hardware.

"We like to get all our platform products from one vendor. It makes problem resolutions about 800 times easier," Seivers said.

Nevertheless, NCR insists that many of its own customers want to take advantage of Microsoft's asymmetric multiprocessing capabilities, which OS/2 currently does not support.

"A lot of the customer feedback we've received is that they'd like someone to take project management responsibility for this migration, especially since users are reaching the maximum potential of

these [OS/2 uniprocessor] environments," said Mark Hurd, a vice president of marketing for NCR's server products.

Jim Dunsen, an information systems manager responsible for software implementation at JC Penney Co. in Dallas, said the retailer is planning to migrate its OS/2 applications to NT on its own.

NT interest

The NCR migration program will initially target users of the 50,000-plus OS/2 servers being used worldwide to take advantage of NT's systems management, multi-processor support and security features, according to Peter Kastner, a vice president at Aberdeen Group, a Boston-based market research firm.

"Our research shows that there's a strong interest in NT by Fortune 1,000 companies, especially where OS/2 was

the underlying operating system for a specific database or as an application preparation package for something like Lotus Notes," Kastner said.

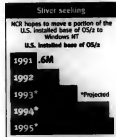
NCR's deep presence among large corporate customers should help lead further credibility to NT, an area in which

Microsoft is attempting to position the product but has had some prior experience, according to David Card, director of the systems research group at International Data Corp. in Framingham, Mass.

One early customer of the OS/2-to-Windows NT migration service is Commonwealth Bank of Australia, which NCR has provided with

migration support for the past few months.

Hurd said NCR has also provided the service to a handful of other U.S.-based banks, though he would not disclose their identities.



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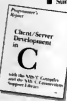
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Bandwidth management crunch attacks local nets

CONTINUED FROM PAGE 55

fact, say, a vertical market, such as manufacturing, be said.

However, "bandwidth is our main challenge. Finding a cost-effective way to deliver multimedia is impossible today," he said, noting that "ATM is too expensive." ATM, or Asynchronous Transfer Mode, is an emerging high-speed switching scheme optimized for combining voice, data and video.

Lure of switching hubs

Situations like the Stubbs' drew Network crowds to check out switching hubs, which let companies use existing technology to dedicate a full LAN's worth of bandwidth to a single resource, such as a server. Attendees clustered around Kalpana, Inc.'s demonstrations of routed Ethernet, for example, which allows simultaneous transmissions in two directions, doubling potential throughput to 200M bit/sec.

Recent progress with that technology has, for the moment, estopped it ahead of potentially competing schemes such as 100Mbit/sec. Ethernet and Token Ring networking. An interoperability competition, announced at the show by Cabletron Systems, Inc., yielded fruit in the form of a reported successful interoperability test among Kalpana, IBM and Compaq Computer Corp. full-duplex gear.

Also, Compaq said its NetFlex Ethernet adapters will be upgradeable to full-duplex in early 1994. This means companies with those adapters already installed would not have to reinvest in adapter cards to use the technology.

These moves make full-duplex Ethernet a "practical tactical" choice because it is looking easy and inexpensive to leverage it, said Michael Howard, president of Industries Research, Inc., a consulting firm in San Jose, Calif.

Graphics-oriented applications are bandwidth-demanding.

"The killer application of the future is here today, and it's called Windows," said Larry Blair, Kalpana vice president of marketing.

"You can take just five PCs all running [Microsoft Corp.'s] PowerPoint at the same time and use 60% to 70% utilization on an Ethernet," Blair said. These loads strain the network.

In fact, Herbert Teague, president of Application Software, Inc., a data services time-share company in Birmingham, Ala., said he is suffering two throughput limitations today: the collision orientation of his shared Ethernet and the size of his PC server buses.

On the LAN side, he said, the Ethernet has "gotten bottlenecked because of Windows and other graphics applications." But, he said, switching hubs would "seem to solve the network side of the problem."

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Cellular One takes systems on the road

By Kim S. Nash
ALBANY, N.Y.

Cellular One has built a client/server customer service and billing system based on The ASK Group, Inc.'s Ingres database and Hewlett-Packard Co. Unix hardware. The impetus: to prepare the mobile phone company administratively to enter paging, long-distance calling and other new communications services.

As the Federal Communications Commission and sister agencies lean toward relaxing tariffs and laws that currently make paging, interactive television and other communications "products" off-limits to some providers, Cellular One is getting hungry. But the firm had to first overhaul its billing system to juggle many new kinds of customer records resulting from its entrance to new communications areas.

"We know we were looking at a lot of opportunities that we didn't know how to handle, that our existing computer systems wouldn't be able to handle," said Richard Goldstein, a vice president at Associated Communications, Inc., Cellular One's parent company. Goldstein helps set Cellular One's business strategy.

Goldstein wanted a customer care system that showed sales agents and marketing staff how often, when and for how long mobile phone users made and received calls. But views into such user-defined information were impossible with the company's IBM 3090-based application,



Cellular One Albany, N.Y.

Challenge: Convert a mainframe-based customer service/billing system to Unix while making sure the system can accommodate new business areas.

Technology: HP 9000 Series 800 Unix workstations and servers; Ingres databases.

Results: Customer service agents can access data stored in relational databases to make more targeted sales pitches and more quickly resolve customer problems.

tion, said Jim Bullock, Cellular One's MIS development manager.

"We wanted to get away from having the IS department the keeper of the data," Bullock said. "Your attitude was, 'Let's give the data to the thinkers in the company.'"

Bullock also knew what he did not want: people glue. The firm's previous billing system had workers facing, mailing and carrying forms around because the computer systems in each department could not talk with one another.

Hence Cellular One's decision about two years ago to throw out flat-file and hierarchical databases for Unix-based Ingres software running on HP 8000 Series 800 servers. The company built Telecommunications Records and Information System (TRIS).

Cellular One plans to go after several new business opportunities, including paging services, traveling wireless voice mail, personal communications services (PCS) and long-distance calling. TRIS was designed to keep track of all customer data associated with these services when — and if — Cellular One offers them.

The company has dipped a toe into a couple of these areas. It created a PCS division this

month. Plus, Cellular One claims to be the first cellular provider in New York to beta test a program giving subscribers unlimited free local cellular phone use within three quarters of a mile of home.

One of the first major muscle flexes TRIS has demonstrated is a program called Choice



Plans. Based on the number of calls a subscriber makes and receives each month and the types of calls they are, Cellular One agents offer him extended options.

The previous customer information system — which ran on IBM 3090 mainframes — kept that kind of data virtually hidden from sales and marketing staffs, Bullock explained. Work-

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ers could not study cross-referenced views of customer data because existing mainframe systems could not respond to queries that called for tying together pieces of information in various databases or tables.

"We were sitting on a source of revenue," Goldstein said.

Cellular One may not be smart to build its billing system in-house, said Herschel Shostack, president of Herschel Shostack Associates, a consulting firm in Silver Spring, Md. "The difficulties involved are so horrendous; this could be a misallocation of resources," he said.

Cellular One officials declined to specify how much TRUS has cost, but Shostack was surprised that this branch of Cellular One, which serves upper New York, has committed what is surely a pretty penny to software development in the face of declining industry profit margins.

For its part, Cellular One sees TRUS as an investment in the future. Off-the-shelf billing systems that integrate wireless and cable subscription services do not exist yet, Bullock said.

"The fact that companies like us can get into these services now at all is completely new. The software doesn't exist to support it yet."

But the move to client/server has traded off the ability to process huge numbers of massive transactions — about 100 hours' worth per week — for the ability to do "more creative" ad hoc decision-making. Bullock and Goldstein agreed, in other words, workers on HP's Vectra PCs can now get customer data without going through IS (see chart), but the system is sometimes "chokingly slow," Bullock said.

Bozman

CONTINUED FROM PAGE 55

the in-house capability to make the Future System dream come true with AIX.

If it does not come true, the dream will have been undone by marketing, not technology. IBM has traditionally positioned its workstations and Unix servers as scientific calculation machines on a separate track from commercial on-line transaction processing (OLTP) mainframes.

Some analysts said they believe powerful Unix and MVS servers will stay that way — separate but equal — giving users more choices.

"In general, they're looking at different sets of problems," said John Morrell, who manages Unix systems research at International Data Corp., a research firm in Framingham, Mass. Having bigger Unix machines, he said, "gives IBM a greater arsenal" to solve a user's problem.

"They're doing parallel processing not to take away the entire mainframe market, but because they recognize that certain customers need this type of computing," he said.

Alternative moves ahead?

However, as more applications get stripped off the traditional mainframe for cost reasons, more functionality will be placed in large Unix servers. And that has some large IBM users, including banks, thinking about alternative Unix-parallel processors for their data centers by the late 1990s.

IBM executives do not rule out an eventual switchover to

Unix-alternative mainframes for users who no longer require System 360-specific applications, such as the BMS database.

"I think you have to look at the Power architecture and AIX as an evolving set of technologies that will span from palmtops to terminals over time," said Bill Filip, president of IBM's Advanced Workstations and Systems business unit in Somers, N.Y. "Mainframes are going to evolve, too, but the gap [between System 360 and Unix machines] will be narrower and narrower."

One Gartner Group scenario is that many of the alterna-

tive mainframes will eventually be Unix servers, including AT&T/NCR, HP and Sequant machines. Until now, certain system pieces have been missing, which kept Unix from measuring up to mainframes.

"It's a capacity issue, but it's also a functionality issue," said Gartner analyst Paul McGuckin. But, in terms of systems management utilities, he said, "this is the year when they will catch up with the proprietary servers."

Given the company it keeps in the Unix industry vendor groups and its plans for scalable Unix machines, IBM must consider that technology alone does not dictate separate tracks for commercial and scientific computers. Technology just dictates faster and more cost-effective data processing. Beyond hardware, the rest of the computing platform comprises systems software and applications.

This means it is ultimately up to users to decide whether RISC/Unix machines will become viable mainframe alternatives in the late 1990s.

Bozman is Computerworld's senior West Coast editor.

As more applications get stripped off the traditional mainframe for cost reasons, more functionality will be placed in large Unix servers. And that has some large IBM users, including banks, thinking about alternative Unix-parallel processors for their data centers by the late 1990s.

petition.



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Tricord announces a suite of servers

By Stephen P. Klett Jr.
MINNEAPOLIS

Tricord Systems, Inc. recently fired a product barrage aimed at rounding out its line of enterprise servers, boosting disk I/O and improving fault tolerance.

Topping the announcements were two additions to the firm's PowerFrame serv-

er family: the entry-level Model 20 and high-end ES4000.

Positioned as a workgroup or small departmental server, the \$6,900-and-up Model 20 includes one Intel Corp. i486DX2 66-MHz CPU, 16M bytes of main memory, a single 425M-byte SCSI-2 disk drive, an eight-slot Extended XT/AT bus and support for redundant arrays of in-

expensive disks Levels 0, 1 and 3. The server is Intel Pentium-upgradable.

With competitors such as AST Research, Inc., Compaq Computer Corp. and IBM announcing low-end servers, Tricord's introduction of an entry-level machine is critical if it wants to capture a share of a potentially lucrative market.

"There is a lot of market potential for

\$10,000 to \$15,000 servers that don't necessarily have [symmetrical multiprocessing] but have fault tolerance built in with some systems management capabilities," said Susan Franklin, an analyst at market research firm International Data Corp. in Framingham, Mass.

Users, however, expressed more interest in the high-end ES4000, which was developed as an alternative to Tricord's top-of-the-line ES6000.

The ES4000 supports up to six Pentium processors and costs \$78,200 to \$918,000. The ES4000, which also supports six processors, starts at \$45,900.

Upgrades expected
Tricord also said it will offer two processor upgrades in the first quarter of 1994. The first will be a new release of its Enhanced Intelligent I/O Processor that will double the clock speed of its Intel 80386 processor to 33 Mhz. The second will allow users to upgrade their Model 30s and 40s to Pentium and advanced 1486 clocking processors.

"We'll definitely get a Pentium chip into one of our boxes as soon as it is available," said Jeff Johnson, director of accounting systems at Chicago & Western Transportation Co., a Chicago-based railroad. "If we see the significant performance increase we're expecting, we'll upgrade the rest of our machines," he said.

"The I/O processor upgrade is something we'll definitely pick up," said Bob Wraga, network administrator at Deere & Co. in Moline, Ill., which runs two Model 40s. "I feel [the upgrade] will improve throughput and network response times... and allow us to add new users without a performance degradation," Wraga said.

Tricord also announced Open Fault Tolerance (OFT) for Unix, which lets customers mirror their servers in a Unix environment via a high-speed, server-to-server link, Tricord said. OFT is slated for fourth-quarter delivery, starting at \$15,995 for a 50-user license.

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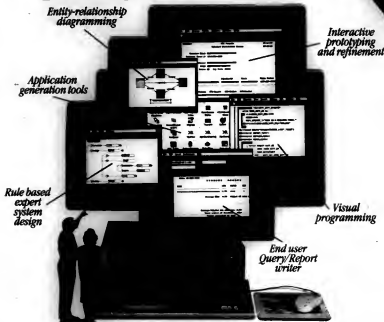
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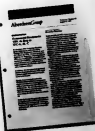
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British Telecom

By J. Keller



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As International Data Group Publishes

BT unit takes the latest EDI off

By Joanie M. Wexler
SAN JOSE, CALIF.

Reflecting fundamental changes occurring in the

COMPUTER

The reason for the growing market

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BY TIM NASH
CHICAGO

March American

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EDI spreads across different business lines

Shipping group agrees on common software Clothing company saves time — consolidates E-mail, EDI

By Lynda Radosevich

Seven major ocean shipping companies recently said they will implement and offer to their customers by mid-1994 an electronic data interchange (EDI) software package that will provide a standard interface for booking and tracking ocean shipments.

EDI package developed by TSI International in Wilton, Conn. Forms in the application are based on the ANSI X12 standard for document interchange.

Ocean is expected to reduce data errors because the information kept in by customers will feed directly into the carriers' systems. Also, it is expected to pare the number of phone calls requesting tracking information.

Using Ocean, a customer can book and confirm orders with shipping instructions and receive a bill of lading, invoice, arrival notice and cargo status. Customers can use Ocean's software-based PC with the Ocean software and dial into a mailbox on their choice of value-

By Lynda Radosevich
SAN FRANCISCO

In Ryer California's modern lobby, employees scurry past the sleek black furnishings with armloads of lacy shirts and flower-print dresses. Behind the scenes at this clothing manufacturer operates one of this country's first inte-

grated electronic mail and electronic data interchange (EDI) systems based on the X.400 messaging protocol.

Currently less than 5% of all EDI traffic runs over X.400 networks, said Vic Wheatman, an electronic commerce strategies analyst at the Gartner Group, Inc. consultancy's Santa Clara, Calif., office. Most of the traffic runs across proprietary transports, he said.

"But unless something brighter and smarter comes up, this is how people will consolidate their E-mail, EDI, voice and video traffic," he said, declining to predict a timeline for widespread adoption.

Tough sell

Ryer supplies retailers such as JC Penney Co., Dillard Department Stores, Inc., Dayton-Hudson Corp. and smaller stores with moderately priced clothing. The clothing uses EDI to exchange form-based information such as purchase orders with those customers — a move dictated to a reluctant Ryer by its fastest trading partners.

"If you'd asked me five years ago, I would not have been a pro-

ponent. At first it seemed more like a hassle than a benefit," said Michael Higgins, technical support manager.

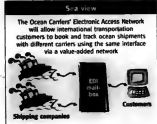
Now, Ryer has become a major advocate of the technology, pushing its trading partners to expand its use for the exchange of electronic invoices, advance ship notices and payments.

Furthermore, Ryer wants to extend electronic communications with its partners using E-mail. To prepare for this, the company is using an X.400 messaging server from Incom in Los Angeles. Ryer uses BT North America's value-added network (VAN) to connect to its partners. E-mail and fax traffic goes piped in from BT through X.400 gateways to the server, which routes the messages to end users' desktops.

Incoming EDI traffic gets routed to an EDI user agent, which forwards the traffic to EDI translation software from St. Paul Software, Inc. in St. Paul, Minn. EDI purchase orders feed into third-generation language or Oracle Corp. databases, and EDI invoices are routed back out through the St. Paul translator.

"Combining E-mail and EDI will be a tactical advantage because there is a lot of interaction between Ryer representatives and customers with any purchase," Higgins said. E-mail would be a valuable addition to phone and fax because it is not time-sensitive, he said.

From an administrator's point
Clothing, page 70



The ocean carriers include American President Lines, Crowley Maritime Corp., Hapag-Lloyd America, Mærsk, Inc., Orient Overseas Container Line, P&O Containers Ltd. and Sea-Land Service, Inc. They are members of a trade group called the Information Systems Agreement, which was founded in 1991 to promote EDI in the shipping industry.

The software, called Ocean Carriers' Electronic Access Network (Ocean) will be a Windows-based

added network. The shipping companies will download information from the mailbox and return replies.

Ocean is similar to booking and tracking applications that overnight package companies Federal Express Corp. and United Parcel Service, Inc. offer, except that it spans rival companies.

Ocean's innovative twist is that it brings together competitors and unites their customer bases, said Shipping.com editor, page 70

Digital sets '94 delivery date for Pathworks for NetWare

By Craig Stedman
WATNAD, MASS.

This time, they say, it's for real.

After a series of false starts, Digital Equipment Corp. has set a January shipment date for a long-delayed version of its Pathworks LAN software said to enable Novell, Inc. NetWare 3.X clients to access files and applications on VAX systems via Novell's IPX transport protocol.

Pathworks Version 1.0 for OpenVMS (NetWare), a release of Novell's Portable NetWare server product for VAX machines running the OpenVMS operating system, will finally put some meat on the bones of Digital's strategy for embracing NetWare and its huge installed base.

Pathworks up to this point has been

built exclusively around Microsoft Corp.'s LAN Manager technology. Supersession software that lets a PC access both Pathworks and NetWare servers but requires different transport protocols to get to them.

The need to load both IPX and Digital's DECnet protocol stack, plus a LAN Manager software that lets a PC access both Pathworks and NetWare servers but requires different transport protocols to get to them.

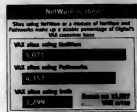
However, Digital's embrace of NetWare has been a long time coming. The company licensed NetWare in early 1992

and said a product would be ready by the end of that year. The schedule was later amended to the first half of this year, and in June, Digital again pushed out shipments to sometime during the summer. More recently, officials were listing late September or this month as the target.

Couldn't wait

The wait proved too much for Dr Pepper Co./The Sevea-Up Co. in Dallas, which was supposed to be a beta site for the NetWare release of Pathworks but eventually lost interest. "There were so many delays that we just decided to sit back and watch," said Ed Homko, systems manager at Dr Pepper.

Dr Pepper will still likely take a look at the NetWare product when it becomes available, Homko said. In the meantime, though, the company has put in more pieces of InterConnections, Inc.'s NetWare-to-VAX software. "They don't do everything, but at least they're there," he noted.



Source: Computer Intelligence, Inc., La Jolla, Calif.

Other users plan to forgive and forget. Currently, Smith Industries Ltd., an aerospace firm in Malvern, Pa., is an all-Pathworks shop, but MIS manager Steve Ruger said being able to tie the NetWare PCs into the VAX servers would give him access to a wider range of applications software.

"There are a lot of packages out there that are NetWare-compatible but have never heard of Pathworks," Ruger said.

Pathworks, page 73

Clothing

CONTINUED FROM PAGE 69

of view, running both functions off one system has obvious advantages, such as simplified administration, Higgins said, and makes it easier to think about adding E-mail to the EDI lineup with its trading partners.

One such partner is Mercantile Stores

Company, Inc. in Fairfield, Ohio. Scott Fitzpatrick, manager of EDI administration there, said the company has been setting up E-mail with some of its larger EDI partners, including Byer, over the past six months.

"We exchange a lot of information with Byer, such as notes and memos, that don't fit into the EDI format," Fitzpatrick said.

Also, Mercantile would like to pull reports such as merchandise reports from

internal systems and send them to partners using E-mail, Fitzpatrick said.

Unlike Byer, however, Mercantile runs EDI and E-mail separately, and Fitzpatrick said he did not know of plans to integrate the two systems.

That separation is common now because most VANs do not fully support the 1985 version of the X.400 worldwide messaging standard, which is needed to support the accompanying X.435 EDI standard, Wheatman said. And although he

said he expects to see the VANs stepping up to X.435 early next year, it will probably be primarily to service key accounts in the petroleum and aerospace industries, he said.

"It's kind of a chicken-and-egg scenario: People won't use [X.435-based EDI] because the VANs don't support it, and the VANs don't support it because people don't use it," he said.

Until its trading partners use X.400 and X.435, Byer will use a transitional X.400 specification called P2 to reduce the time it takes to receive EDI messages from BT.

Before X.400

Before moving to X.400, Byer had an EDI mailbox at BT. Once a day, Byer dialed into the mailbox to upload and download information. If a trading partner were on another network, Byer would have to wait until that network exchanged mailbox information with BT and the trading partner had downloaded the information.

Using that model, a purchase order could take 30 hours or more to get to its destination, Higgins said.

Now Byer receives all EDI information wrapped in an X.400 P2 "envelope," a much faster method because the X.400 messages are automatically piped from BT without "the resting period," Higgins said.



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CONTINUED FROM PAGE 69

Torrey Ryles, EDI program manager at Input, a consulting company in Mountain View, Calif.

"Right now there is no common customer application in the shipping industry," said William H. Kendall, chairman of the trade group and a vice president of corporate marketing at Sea-Land. The group formed to address the lack of standard EDI software for shipping customers, and Ocean is the first fruit of its labor.

Next, the group would like to increase the number of carriers involved with Ocean, Kendall said.

Earlier EDI efforts in the shipping industry revolved around transportation industry groups, such as ports, warehouse operators, shipping lines and trucking companies — not the transportation customer, Ryles said.

All major shipping ports in the U.S. use EDI for some functions, such as internal coordination with the trucking lines, but there is not a seamless flow of data throughout the shipping process.

By offering a standardized interface to people in the trading community, the carriers are likely to improve their business, Ryles said.

Pricing for Ocean has not been established.



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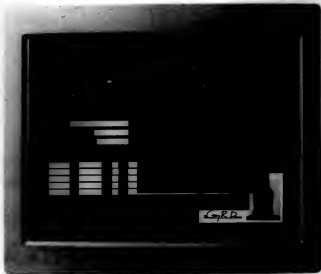
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Digital sets Pathworks delivery

CONTINUED FROM PAGE 69

Functions such as modem sharing can be implemented on the VAX to make up for the lack of Pathworks support, but that alternative "gets very expensive because they charge charging VMS license prices," he added.

The NetWare ascent

"I haven't seen another product that brought me as close to [NetWare server] emulation as this," said Dave Yakerson, network administrator at Bridgeport Hy-

dralco Co., a private-sector water utility in Bridgeport, Conn. The company is currently beta testing Pathworks for NetWare. "To our users, it smells just like NetWare."

The delays did prompt Yakerson to using the software and look at alternative, but he said it was being reinstalled last week and will be used permanently "unless something major happens." He remains a bit wary about the January shipment date, though. "Keep your fingers crossed," he said.

Catherine Smith, Digital's Pathworks

for NetWare marketing manager, said the delays have been caused by performance slowdowns at the server level as users are added to create "more demanding environments than small pilots." The scaling problems "will be taken care of" by the time the software becomes available, she added.

Hays noted that Digital has had to do "almost a total rewrite" of Portable NetWare, which is typically a Unix product. The company has also found it "very

complex" to integrate the license management software that Novell insisted be included to keep track of NetWare licenses, according to Hays.

Digital, which is working to implement native NetWare on its server Alpha AXP systems line, will add Alpha support to Pathworks for NetWare "in the very near term," Smith said. Support for the DEC OS/1 operating system on Alpha is also planned, but Smith would not say when that would be available.

Trodding a similar path

Digital said shipments of its Pathworks Version 5.0 server software based on Microsoft's LAN Manager will also start in January. That is slightly behind the company's previous schedule, which called for Pathworks 5.0 to be out before the end of this year.

Pathworks 5.0 runs under the DEC OS/1 operating system on Alpha AXP systems and under Open VMS on both the Alpha and VAX lines. New features include support for Microsoft's NetBUI transport and a MessageWorks module for managing native LAN Manager and Novell NetWare servers from a Pathworks-equipped PC [CW, Oct. 4].

MessageWorks is also available with Pathworks Version 1.0 for Open VMS (NetWare), which has the same pricing as Pathworks 5.0. Traditional client licenses cost \$205 and include file and print access to unlimited servers plus MessageWorks, the TFTP and DECnet transports and Pathworks applications such as terminal emulation and electronic mail.

As promised, Digital for the first time is also offering concurrent-use licenses providing access only to file and print services on a specific server [CW, June 21]. Prices range from \$8,000 for 10 users to \$18,750 for 250; a license enabling an individual PC to access multiple servers costs \$90 per seat, the company said.

Catherine Smith, Pathworks for NetWare marketing manager, said Digital plans to combine that package and Pathworks 5.0 with the next major release of the software. The merged product should provide the same kind of multi-server LAN management capabilities at the server level as MessageWorks allows for clients, she added.

Both Pathworks 5.0 and Pathworks for NetWare will lack support at first for Apple Computer, Inc.'s AppleShare file and print services, which the existing Pathworks 4.5 software includes. Smith said AppleShare support will be added to the new versions, but she did not say when that will happen. —Craig Stedman

TSI unveils Windows-based mapping product

By Lynda Radosevich
WILTON, CONN.

Developments in Windows-based electronic data interchange (EDI) software and object technology are making it easier for customers to set up EDI exchanges with small business trading partners and organizations such as ocean shipping companies (see story page 69).

For instance, TSI International recently announced a Windows-based "mapping" product that lets developers use graphical objects to link data from fields in EDI forms to fields in business applications.

Currently, companies must program such "maps" themselves or use field mapping packages, alternatives that tend to lose some attributes of the data, according to TSI officials.

The new product, called Mercator, uses object technology and embedded rules to define both data structures and maps. It is the first mapping product to use the drag-and-drop features of Windows, according to Turvey Byles, manager of EDI and electronic commerce at Input, a consulting company in Mountain View, Calif.

Mercator will ship Nov. 1 and cost \$2,500 for one client version for creating maps and one server version for executing the links, according to TSI.

Separately, TSI announced trading partner kits, which comprise Windows-based EDI software for small business and free-time users.

The kits are preconfigured to meet the specific requirements of major EDI trading programs in the retail, insurance, health care, transportation, communications and manufacturing industries.



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☐ Yes ☐ No

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☐ Yes ☐ No

A critical component of business growth is increased sales output. To maximize each business opportunity, you need a way to leverage your entire organization—to bring it totally to bear at the point of customer contact.

4. Do you really know what your customers want?
☐ Yes ☐ No

Are you alert to *every* product your customers could use? *Every* service that might interest them? *Every* transaction they're prepared to make? *Every* sale they'd allow you to clinch? Are you thoroughly tapped into your market?

5. Does your entire organization know what your customers want?
☐ Yes ☐ No

A customer orientation has limited value unless it's embedded in the very fiber of an enterprise—at all levels, and at every place that directly or indirectly impacts the customer.

6. Is your information strategy focused on helping you hear what customers and markets are trying to tell you?
☐ Yes ☐ No

The next best thing to reading your customers' minds is listening to what they're saying. But unless you're constantly tuned in to customers' signals, you're missing messages that could guide you to greater results for your business.

7. Can your organization respond quickly to what customers and markets are telling you?
☐ Yes ☐ No

When the flow lines of your information system are not within your customers' reach, you won't always sense when opportunity knocks. But even if you do, getting the message is not enough. If you can't reply rapidly to market cues with information, products and services, revenue opportunities are lost.

8. Does your information strategy enable you to proactively deliver information to your customers?
☐ Yes ☐ No

Many business plans underestimate the power of information to build customer relationships. But imagine the advantage of an information technology strategy that transforms information into customer-generating, revenue-generating fuel.

9. Are the full capabilities of your organization accessible to your customers at all your field locations?
☐ Yes ☐ No

An office. A branch. A retail site. To a customer, that's your company. One small part of the whole. Which is why you need to leverage your entire organization by extending its capabilities to each point of customer contact.

10. Does your information strategy reflect the bottom-line importance of customer service?
☐ Yes ☐ No

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Enterprise Networking

Artisoft inks deals with VisiSoft to appease corporate accounts

By Elisabeth Horvitz
TUCSON, ARIZ.

Hoping to make its LANtastic network operating system more viable within corporate accounts, Artisoft Corp. last week announced an agreement whereby VisiSoft, Inc. will provide network management software for the peer-to-peer network.

"As you move [a network operating system] from the department to the enterprise, the management instrument comes up" with information systems managers asking, "How can we control network services and resources with our existing management software?" said Artisoft spokesman Joe Walsky.

Through a new version of VisiSoft's VisiNet, scheduled for delivery by year's end, users will be able to do real-time performance monitoring and configuration tracking of "all resources tied to a LANtastic network," he said. These resources include clients, client software and hardware and the links themselves.

In addition, the VisiNet software for LANtastic can share a Windows console with other VisiSoft products for managing NetBIOS LANs as well as Novell, Inc. NetWare 2.x, 3.x and 4.x; Microsoft Corp.

LAN Manager; IBM LAN Server; and Simple Network Management Protocol-managed devices, the vendors said.

The VisiNet product for LANtastic will include trouble-ticket reporting and historical activity logging as well as the use of Microsoft, Dynamic Data Exchange and Object Linking and Embedding functions to alert remote sites. User-definable icons, polling, alarms and three-hosts are also supported, as well as an inventory system for hardware and software.

VisiNet for LANtastic pricing was not available; however, it is likely to be comparable to the NetBIOS version, which is \$750, a VisiSoft spokesman said.

Another recent Artisoft announcement geared to the corporate market was an agreement with Mountain Network Solutions, Inc. to jointly develop backup and recovery systems for Artisoft's LAN platform.

The initial piece of the Artisoft Backup software suite, to ship this fall, will be a software product that will be compatible with industry-standard SCSI tape backup drives, priced at \$350.

The backup software will run on any LANtastic server to back up the drive and any other server across the network, Artisoft said.

Coming soon

Another recent corporate-oriented Artisoft announcement was LANtastic warehouse software, which lets LANtastic Version 5.0 users running on desktop LAN hardware, calling and tape drives. The software is scheduled to ship this fall, priced at \$99 per segment.

Briefs

API for petroleum industry
Newlett-Petroleum Co. said it has delivered an application programming interface (API) based on object-oriented database technology to the Petroleum-related Open Software Corp., a consortium formed to facilitate the use of integrated technology. The API was designed to help companies blend independently developed oil and gas software applications.

Training addressed

The National Association of Communications System Engineers in Denver announced that it has become an independent certification organization for education and testing of communications professionals. The association will implement training provided by vendors and rate skills on a common ground.

Forms software distributed

JedForm Corp. in Waltham, Mass., said Digital Equipment Corp. agreed a worldwide distribution agreement for JedForm electronic forms software for the Digital VAX/VMS. Also,

Artisoft said that Olivetti North America agreed to resell five related JetForm forms products in conjunction with Olivetti's bank branch automation software.

ATM guaranteed

AT&T and INCR Corp. launched a technology guarantee program for their UnivacCell line of Asynchronous Transfer Mode (ATM)-based premises communication switches. The program is meant to help customers decide to stick with AT&T/INCR as they upgrade their IBM's Token Ring to ATM by providing customers an ATM hub upgrade by the end of 1994 or a \$5,000 payment.

EMA board elected

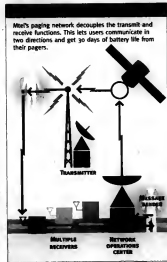
The Electronic Mail Association (EMA) recently elected new members to its board, including Lotus Development Corp. and Microsoft Corp. executives and analysts from Creative Networks, Inc. and Support Communications. Outgoing board members include representatives from InterNetwork, Inc., AT&T Intellect Services, Digital, Texas, Inc., The Boeing Co. and Prime Digital, Inc.

Two-way paging takes flight

National Wireless Network to soon hit 300 markets

By Ellis Booker
JACKSON, MISS.

Just when you thought you had a complete list of wide-area wireless networks to choose from, the list grows by one. Mobile Telecommunication Technologies Corp. (Mtel), headquartered here, plans to deploy late next year a bidirectional, data-only network called the National Wireless Network (NWN), occupying spectrum in the radio-frequency band today reserved for one-way-only paging devices.



The NWN is slated for commercial operation in about 300 markets in July 1995. According to wireless industry analysts, Mtel's wireless network has the potential to make wireless messaging services a ubiquitous and affordable commodity for mobile professionals and a broader consumer electronics market.

At the very least NWN will, they said, impact the pricing and services of existing packet radio providers.

"The fully delivered network will compete head-on with [RAM Mobile Data] and Ardis," said Andrew M. Seybold, editor in chief of "Andrew Seybold's Outlook on Mobile Computing" newsletter in Brookdale, Calif.

Meanwhile, the broad national coverage of the NWN, enabled by some technical concepts behind personal communication systems called "microcells," will speed the cellular industry's plan to pump data calls back and forth over idle voice channels on its wide-reaching networks. Several cellular carriers expect to have that tech-

nology, called Cellular Digital Packet Data, next year.

NWN leverages Mtel's experience as parent of the largest nationwide paging network, SkyTel Corp. As of Sept. 30, SkyTel had more than 300,000 subscribers. The NWN architecture will allow the mobile terminals — either specialized devices or general-purpose computers and personal digital assistants (PDAs) — to use very low-power transmitters.

"We'll offer much longer battery life... and I don't mean increasing 'talk time' from four hours to six hours," said Emmett Hume, senior vice president of marketing and business development at NWN. "We're talking about a 30-day battery life with commercially available batteries."

Paul Callahan, a senior analyst at Forrester Research, Inc. in Cambridge, Mass., agreed that "it's a compelling technology for handheld devices." The portable communicating devices that will work with the NWN are being built by Motorola, Inc. and Wireless Access, Inc. in Mountain View, Calif. Both firms are working on stand-alone devices capable of transmitting limited "acknowledgment" responses, such as "Yes, let's meet" or "No, I'm busy." Or an automatic acknowledgment can go to the sender to indicate, for example, simply that a message has been read.

Hume said NWN sees applications for both mobile professionals and a broader consumer marketplace for two-way paging. "We're not going after vertical segments," he said. "We're looking to distribute [this service and associated products] alongside PDAs in retail establishments."

How will NWN pay the estimated \$100 million needed to build its network? Apparently, discussions with major software, hardware and networking companies as potential partners are under way, though Mtel executives would not comment on their status.

Similarly, NWN executives will not comment on the service pricing being considered for NWN.

But Seybold said Mtel is evaluating at least one \$40-per-month pricing scheme. By comparison, RAM Mobile Data's regular rates are now \$25 per month per subscriber plus use charges. However, RAM is running an unlimited-use, \$75 special running through 1993.

Pricing, though, is less important than coverage and convenience, Seybold said. "At under \$100 a month, cost is really a nonissue for most users."

Limiting the punch

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IBM, Novell take divergent remote access paths

By Elisabeth Horvitt

DALLAS

IBM and Novell, Inc. outlined different approaches to the problem of managing remote user access to LAN servers at the recent November '89 show, though both vendors moved to help LAN administrators make LAN resources available to the proliferating population of mobile users. Novell and partner Citrix Systems, Inc., for example, said they would integrate Citrix's WinView for Networks with Novell's NetWare Connect. WinView for Networks allows remote users to send in jobs to be run on a LAN application server; NetWare Connect manages dial-out and dial-in LAN communications.

This co-development is slated to produce what has been dubbed Domain Manager, a product that

"provides a managed execution environment for applications" serving mobile laptop users, said Edward Jacobson, Citrix chairman.

The system will reportedly coordinate jobs entered by mobile users and distribute them across multiple CPUs located in one computer or dispersed across many.

The system will provide mobile users with access to LAN resources

such as high-end workstations running sophisticated applications that may not fit on a laptop, Jacobson said. Similarly, the server will make memory- and CPU-intensive applications, such as Lotus Development Corp.'s Notes, available on 286-based PCs, said Gerry Machi, vice president of Novell's interoperability group.

Oldies but goodies

Domain Manager should help companies "keep a lot of their old clunkers" for a cost savings that should be attractive to many firms, said George Kelly, a principal at Morgan Stanley & Co., a New York investment firm.

The initial server will support 50 to 60 concurrent requests. The system will run on DOS, Windows and OS/2; a UnixWare version is scheduled, but at an undisclosed date.

Meanwhile, IBM—and partners Star Gate Technologies, Inc. and TelePartners International—took a different approach to the remote LAN access problem with LAN Distance, an OS/2 server built to connect remote OS/2 clients to

servers throughout the LAN.

Unlike the Novell/Citrix Domain Manager strategy, however, LAN Distance lets remote PCs run applications locally, accessing the LAN servers only when they need data, according to Art Oberg, director of IBM's Personal Software Products division. This conserves bandwidth by limiting communications be-

tween the remote PC and the LAN to a few keystrokes and data transfers, he said.

LAN Distance Connection Server for OS/2 is said to allow multiple PCs to dial in and concurrently access LAN resources while supporting user identification, password and call-back security functions. Network software supported includes IBM's OS/2 LAN Server, Net-

Ware and Banyan Systems, Inc.'s Vines.

The number of PCs supported depends on the power of the PC and type of communications adapter, IBM said.

The product is scheduled for Oct. 29 availability, priced at \$50 for the client software and \$500 for an eight-port LAN Distance Connection Server. A 32-plus port server version will cost \$1,995.

Announcing COMPUTERWORLD on CD

Teamwork

A team within the Personal Software Products group at IBM rolled out its OS/2-based remote access product at November, the IBM Networking Symposium group unveiled the first fruits of its relationship with Star Gate Corp., an internally competing hardware-driven product that reportedly allows users running any of several supported protocols to dial into home LAN and access everything they could if they were local.

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Memorex Telex has introduced products designed to provide mainframe access to intelligent and SNA devices.

According to the Raleigh, N.C., company, the products integrate LAN and mainframe environments for client/server computing.

The Memorex Telex 8400 Enterprise Communications family consists of the

9432 Enterprise Gateway, an integrated gateway server that provides channel attachment to mainframes for enterprise networks; the 9420 Communication Server, an integrated product for communications and applications serving to meet branch office and departmental needs; and the 9490 Internetworking Communication Subsystem, a bus-attached network communication system for super-servers.

Support is provided for Novell, Inc.'s

NetWare, traditional SNA and TCP/IP devices.

Pricing begins at \$20,500.

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McData Corp. has announced network software modules designed to give Novell, Inc.'s NetWare LAN users and Unix workgroups access to IBM mainframes.

The products consist of the Advanced SNA/IP Gateway, an application for No-

vell's NetWare for SAA users and the X-Direct toS270 Client and Server packages.

According to the Broomfield, Colo., company, the Advanced SNA/IP Gateway is coupled with its Advanced SNA/IP transport technology to provide end-to-end SNA services over an IP network from the Novell LAN to IBM mainframes.

The X-Direct toS270 IBM terminal and supports both the X Window Motif and OpenLook window managers.

An average package of the Advanced SNA/IP Gateway costs approximately \$1,500 based on the number of users supported. Single-user prices for X-Direct toS270 Client software start at \$495.

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Livingston Enterprises, Inc. has introduced an enhanced PortMaster product family that fully supports Novell, Inc.'s IPX protocol.

Consisting of a series of scalable communications servers and a line of multi-protocol routers, PortMaster products extend advanced dial-up internetworking services and secure remote network access to NetWare LAN users, according to the Pleasanton, Calif., company.

Shared peripheral capabilities for TCP/IP network systems and terminal-to-host links are provided. Options such as dial-back, filtering and centralized authentication services are also offered.

Prices range from \$395 to \$3,750.

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Product shorts

Castelle, Inc. has announced PnPPress 1000, a compact fax server for Novell, Inc.'s NetWare networks. The product includes all of the hardware and software necessary for fax services for up to 100 network users. Users can send faxes from within any DOS or Windows 3.1 application, and PnPPress 1000 features extensive user-definable options, secured manual routing and personal and corporate phone books. Cost: \$1,995. Castelle, Santa Clara, Calif. (408) 498-0474.

Eicon Technology Corp. has introduced InterConnect Server for NetWare, a router/gateway product designed to provide remote PC and workstation users with complete access to their corporate resources over an internetwork or SNA network. Highlights include the ability to route IPX, IP and Apple Computer, Inc.'s AppleTalk LAN protocols, remote configuration and management through a Windows-based console. Cost: \$3,495. Eicon Technology, Montreal (514) 631-2582.

Beyond, Inc. has announced BeyondMail Remote Access for Banyan Systems, Inc.'s Vines, a single-user edition of BeyondMail for remote users and for those who are traveling away from the network. Users can create and store messages, move messages from folder to folder, create and set rules and delete messages. It is available for Windows and DOS. Cost: \$295. Beyond, Burlington, Mass. (617) 229-0006.

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For more information on the HP Windows Client, contact your local HP sales office or HP authorized reseller, or call HP at 1-800-537-7740 extension 7736 (1-800-387-3867 in Canada). It could make a world of difference to your organization.



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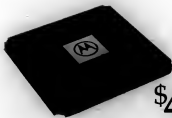
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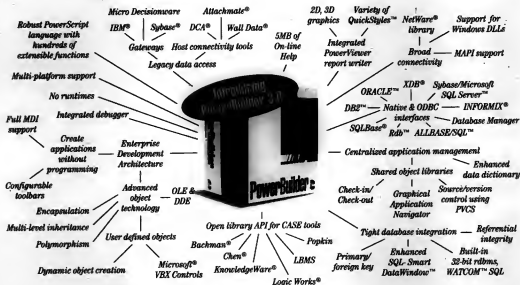
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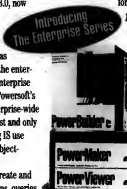
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Large Systems

HP ADDRESSES MINICOMPUTER
COMPLAINTS, 86
NEW PRODUCTS, 93

GTE overhaul polishes customer service process

By Thomas Hoffman
IRVING, TEXAS

GTE Corp.'s Telephone Operations group has replaced its mainframe-based customer service system with client/server architecture, for productivity gains of 20% to 30%.

Before the new system — implemented as part of a 19-month massive corporate re-engineering effort — GTE was able to resolve customer problems on-line only once every 200 calls. But that was not good enough, said Mark Reichen, vice president of product management at GTE and the person overseeing the re-engineering projects. Customers wanted a single source to resolve any and all inquiries — ranging from a problematic telephone line to billing questions.

New equipment moves in
The new scenario uses Hewlett-Packard Co. Unix-based servers with attached HP client computers ranging from DOS and Windows-equipped PCs to workstations outfitted with custom graphical user interfaces. These replace the IBM

3270-type terminals that customer service representatives and other staffers use to access information in the company's IBM, IBM-compatible and Honeywell, Inc. mainframes — data on customers' telecommunications infrastructures, customer records and consignment information [CW, April 8, 1991].



GTE's Frank Zachert: GTE will decide on a wireless computing platform in the next few months

No more delays
Before, if a customer representative using a dumb terminal was unable to match a customer's account with his current bill, the representative would have to interrupt the call to access another mainframe system, further delaying the resolution of the problem, according to Larry Russell, GTE Telephone Operations director of information systems.

The mainframes are still in place, however, and are the source for the data feeding the client/server systems.

The new systems also include an automated work assignment system, a client/server configuration that allows customer service representatives to automatically as-

GTE, page 88

Software distribution key to open systems

By Joan S. Bozman

Distributing new or improved software to hundreds or thousands of end users is a major challenge for information systems managers. Two distribution utilities due to arrive in 1994 could help solve that problem.

Microsoft Corp.'s Hermes software distribution manager and the Open Software Foundation's (OSF) Software Distribution Service, part of the OSF's Distributed Management Environment (DME), will vie for market share in this arena. They are meant to help IS groups trying to create open systems applications without the comfort of the familiar, centralized software management utilities found on data center mainframes.

Until they become available, maintaining current copies of office automation software and custom applications will continue to be chaotic, users and industry analysts agree. Inadequate software distribution systems could slow widespread adoption of enterprise-wide open systems in the near term, analysts said.

"Right now, it's a total mess," said Ed Acty, director of software research at International Data Corp. in Framingham, Mass. "When we get serious about doing distributed computing, we need systems software because you can't mail everybody a copy of the software." Even the old-fashioned "Snackernet" method of passing

software around is not fast enough, he said, noting that many firms straddle the globe — and need updates in many countries.

Software distribution utilities do exist, not only on mainframes, but in Novell, Inc. NetWare networks and in Sun Microsystems, Inc. networks running SunNet Manager, noted Terry Bennett, an analyst at Computer Intelligence/InfoCorp in Beaverton, Ore. However, mixed-platform networks will require more tools and utilities for timely software updates, he said.

Hermes vs. OSF

Microsoft's Hermes software management utility for NT

Centralized control from SQL Server database repository

Works with servers running Windows NT

Updates software to PC clients throughout user's network

Ships by mid-1994

The OSF's Software Distribution Service, provided under IBM

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Oct./Nov. 1991

The distribution problem is as down-to-earth, as copying data from floppy disks and as complicated as coordinating a mass mailing. "It's a controlled replication problem, since each Microsoft, page 82

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HP mulls Image/SQL fixes

By Mark Hajer
PALM ALTO, CALIF.

Users of Hewlett-Packard Co.'s HP 3000 with massive record-keeping requirements are experiencing data-entry slowdowns and capacity limitations with HP's proprietary Image/SQL database.

But HP has a few solutions in mind, some of which it plans to implement in the second quarter of 1994.

Many users hitting the Image wall are in the health care and insurance fields, where operations such as hospitals and health maintenance organizations need data sets that are too large for the 4G-byte limitation imposed on Image by the HP 3000's MPE/IX operating system.

While the number of HP users with this limitation is "very small," according to HP's Image/SQL lab manager Jim Sartain, the restriction is a "very important limitation" to them, he acknowledged.

Jerry Potchman, chairman of RightImage, a special interest group within the HP user organization, said more users will start running into this problem because HP continuously enlarges hard-disk capabilities, thereby encouraging users to keep pushing the database to its limits.

Fix on the way

About 5% of the HP user base has capacity limitations with HP's proprietary database, HP predicts at least a partial fix by June 1994.

A database analyst at a manufacturing company said he has never relied on his 150 HP 3000s to store large databases because of historic capacity limitations.

"We keep our mega databases on mainframes," he said. And although HP is addressing the problem, the company may still not use Image for its large databases because its long-term goal is to migrate to Unix platforms; it may change its database supplier altogether, he said.

HP is contemplating two ways to enlarge Image data sets, both of which would require a major re-release of the database. One would mean a change to the MPE/IX operating system.

Multiple file data sets

One technique that could yield a quantum leap in capacity: permitting a data set to house multiple files. Right now, an Image data set can house only one file. Through this method on Image, "instead of going from 4 to 8 gigabytes, you could go from 4 to 400 or 4,000," Sartain said.

The drawback of such a gargantuan limitation would be robbing disk space from nondatabase functions, so HP is considering modifying MPE/IX to permit more modest leaps in Image capacity.

Sartain said HP has surveyed users and expects to make a decision in two to three months based on that feedback. The company may decide to implement both enhancements, he said, although he declined to say how long each might take.

While HP contemplates enlarging data set capacity, it has in the meantime committed to a couple of modifications to Image that should help speed up data entry for large users.

In one case, HP is redesigning Image so the HP 3000 will no longer automatically execute the "delete chain" method of entering data. In this method, the HP

3000 routes new data to disk space freed by earlier deletions from the database.

Some users have complained that the delete chain method slows new data entries because the system labors through the time-consuming task of searching for empty space. HP is modifying Image/SQL, so it will instead store newly entered records immediately after the last record stored.

HP plans to support this process in the next release of the HP 3000's MPE/IX

scheduled for the second quarter of 1994. The company is adding this feature as an option on each data set.

Meanwhile, HP has at least one other plan to improve Image/SQL's write speed. Namely, the company is modifying MPE/IX to support dynamic changes to record size.

When that is completed, users will be able to expand disk space allocated for the database without having to shut the machine down as they do now.

Clean up

Network management can get messy—especially when you have multiple environments. Fortunately the people who helped you build your network have a cleaner way to manage it all.

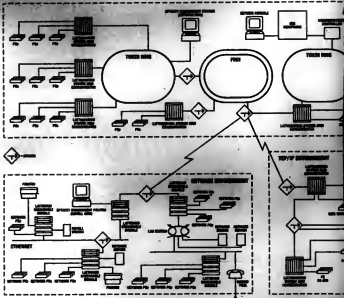
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Vernon M. Allison

Storing away savings

System-managed storage (SMS) is now widely used in the MVS community. Almost everyone has either implemented SMS or says they plan to. But few are actually realizing the full benefits.

SMS isn't paying off as well as it could because it isn't being aimed in the right direction. Most sites employ SMS to give the storage administrator better control and/or to make more efficient use of storage resources. Both goals are worthwhile, but the improvements that SMS

can produce in these areas are small compared with what it can accomplish when used for the specific purpose of improving service to storage users.

Sound unlikely? Then consider this: If your storage costs are 10% of your IS expenditure, achieving a 10% savings here gives you 1% on the bottom line of the IS budget. While this is certainly worth pursuing, remember how a much bigger part of your IS budget is given to the costs of people—most put the figure at some-

where around 60%. If SMS can help you to improve the productivity of your IS staff and reduce that number, then the payback is virtually guaranteed to be bigger.

Whether or not they realize or admit it, IS users do spend time managing storage. They find and defend storage space. They perform backups to guard against problems with the storage hardware and software. They contend for the "best volumes" searching for better performance.

Of course, users don't view these tasks as storage administration; it's just "part of the job." That's why it's so difficult to find the total cost of data storage. Nevertheless, all of these small tasks do add up and it's possible to use SMS to relieve the users of most of this burden. This can be the most important benefit of SMS.

If the productivity of the users could be improved by just 5%, there would be a 4% savings, or four times the SMS savings in storage hardware costs.

Unfortunately, because the storage administration function in most installations has not embraced user service as an objective for the SMS implementation, the potential benefits of SMS are not being realized.

Setting priorities

IS management will have to make the implementation of SMS a priority—not just for the storage administration function, but for user departments as well. Cooperation among the users of storage and storage administrators is essential.

Considerable design creativity will be required to build SMS applications that really deliver. The storage administrator may even want to seek help from the application development side, to make sure he or she is understanding and meeting requirements. It is also important to understand that if you want to get the users out of the storage-resource management game, you probably need to adopt a service-based accounting and billing system to replace resource-based billing.

Some installations have taken this approach and are already realizing a wide range of benefits. Most, however, have just not found their way to a quality storage management application that actually delivers better service to the users of storage resources.

Allison is a consulting partner and vice president at Washington Systems Consulting, Inc., a management consulting firm in Gaithersburg, Md. He has worked in the industry for more than 25 years, most of that time at IBM.

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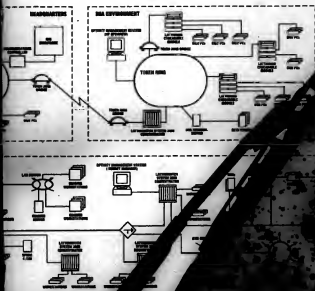
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GTE overhaul

CONTINUED FROM PAGE 85

sign repair technicians to a customer's site while the client is still on the line. In the past, GTE's repair clerks would jot down information from a customer, fill out a trouble ticket and route the ticket to repair technicians who tested customer switches and telephone lines until the problem was corrected.

With the new systems, some of the repair work will continue to be handled by field technicians, who will be equipped with mobile data terminals once GTE decides on a wireless computing platform in the next few months, according to Frank Zachert, assistant vice president of re-engineering systems at GTE.

Boosted service

Taken together, the new systems have enabled the company to resolve customer inquiries on-line 30% of the time. Feighner has set a goal of 70% on-line customer satisfaction after further refinements are made to the systems in the next 18 to 24 months.

Unix was chosen as the telephone company would not be beholden to one vendor, Russell said. He added that GTE is betting that a common set of Unix application programming interfaces being de-

veloped by the Open Software Foundation and X/Open Co. among others, will allow GTE to mix and match Unix systems throughout its enterprise.

GTE Telephone Operations embarked on a major business process re-engineering initiative in January 1992 to transform its customer services operations. IBM Consulting Group, Boston Consulting Group and Andersen Consulting, among others, are providing technical and professional services. The

project will include the implementation of \$300 million to \$600 million in client/server systems in the next five years.

Although GTE Corp.'s Telephone Operations is consistently profitable and accounts for 80% of the telecommunications giant's \$20 billion-plus in annual revenue, wholesale operational changes were needed to improve the unit's efficiency. GTE continues to lag behind industry leaders such as Bell Atlantic Corp. and Ameritech Corp. in this area,

according to financial analysts.

To meet these challenges, "a telephone company is the perfect place to try to implement a single point-of-contact for customers," said Joseph Beatty, a telecommunications analyst at Duff & Phelps, Inc., a brokerage in Chicago. Beatty said GTE's client/server plans make sense, especially because a similar effort undertaken five years ago by Bell Atlantic helped fuel productivity gains and reduced headcount by 20,000.

CHOOSING THE WORLD'S BIGGEST DATABASE COMPANY MAY SEEM SAFE.

Test pilot

For the past year, GTE has run a pilot application called the Customer Marketing Service System (CMSS) at its Tampa, Fla., center.

CMSS, used by 160 service representatives, is made up of HP 9000 Model 735 workstations running HP/UX and MacII. It includes an application developed in-house, The Sales Assistant. The application prompts representatives to offer customary services such as call waiting, data transfer and even videotext conferencing. Frank Zachert, assistant vice president of re-engineering systems at GTE, said the company plans to implement similar systems at its other regional centers next year, except in California, where the systems will be phased in during 1995.

Katha Leslie, a billing service representative in Tampa, said she likes the system because it has replaced many manual processes, such as disseminating a phone or recording bills. These are now handled automatically.

But as much as some of the representatives like the system, some customers do not. "Once that due date comes around and a customer hasn't paid, the computer asks off their services. Customers have complained that it's dehumanizing, but it makes it easier for us," Leslie said. — Thomas Hoffman

Freeport makes early move to client/server

By Mark Halper
NEW ORLEANS

Freeport-McMohan, Inc. knew it would eventually ask its mainframe outsourcing, IBM's Integrated Systems Solutions Corp. (ISSC), to migrate headquarters operations here to a client/server platform.

But Freeport had to make that request a lot sooner than it had anticipated, prompted by a major change in business last January. The energy and mining company gave up control of its most mainframe-reliant operation, its Agrio Chemical Co. retail fertilizer subsidiary, to a joint venture run by International Mineral Corp. in Chicago.

The Agrio spin-off led Freeport and ISSC to abandon their previous 10-year, hybrid mainframe/client/server contract in favor of a five-year, purely client/server pact [CW, Oct. 11].

The new arrangement calls for ISSC to start moving Freeport's home office computing platform in January from an ISSC mainframe data center in Lexington, Ky,

to a Hewlett-Packard Co. HP 9000 machine in New Orleans.

Although International Mineral joined forces with Agrio in January, the real instigator to renegotiations came in July, when it assumed processing responsibilities for Agrio. Until that time, ISSC's mainframe service was indispensable to Freeport, said Freeport chief information officer Mike Arnold.

ISSC was running the fertilizer retailer's sales and marketing program and processing vital retail orders six days a week from 6 a.m. to 11 p.m.

Fertilizing MIPS

"The core system that had the most stringent uptime requirement was the Agrio marketing system. It was taking customer orders from all distribution sites all day long," Arnold noted.

By comparison, Freeport's sulfur, oil and gas and copper and gold businesses process sales on a contractual basis and do not have the same real-time needs as does a retail business.

Programs that Freeport is moving from ISSC's mainframe to the HP 9000 Model 860 include corporate financials, oil and gas accounting, master limited partnership tax, corporate tax, human resources and benefits administration, said Steve Bellis, director of corporate MIS.

Freeport and ISSC hope to tie the HP computer into its 300 PCs in New Orleans by July of next year.

ISSC will also take over operation of a Digital Equipment Corp. VAX 4300 that Freeport uses for materials management, purchasing, inventory control, inventory accounting and preventive maintenance for its sulfur business, Bellis said.

While the move to client/server computing is new for Freeport's New Orleans operations, the company has had client/server experience at other sites.

For instance, Freeport uses HP 9000s to support purchasing, inventory and financial applications for its copper and gold mining operations in Djakarta and Iran Jaya, Indonesia; in Singapore; and in Cairns, Australia.

Meanwhile, Andersen Consulting will continue in its role of application developer, Arnold said, writing code in New Orleans around an Informix Corp. database using Informix tools. The company is purchasing a smaller HP 9000, a Model 847, for development.

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- User Interfaces: Windows, Motif, Macintosh, Character Mode
- Networks: Netware, LAN Manager, TCP/IP

KEY CLIENT/SERVER TECHNOLOGIES

- Graphical User Interfaces (GUIs)
- Event-Driven Applications
- Object Oriented Development

CLIENT/SERVER SOFTWARE TYPES

- Database Management Systems
- Network Software
- Tools: CASE, Application Development, and End User
- Application Packages

SELECTED CLIENT/SERVER STANDARDS

- ANSI/ISO SQL is the industry standard for RDBMS access
- ODF DCE defines specifications for distributed computing, including remote procedure calls, directory services, and security services
- X/Open's XA interface defines a standard interface which provides interoperability between heterogeneous transaction processing monitors

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- (1) Client/Server is the dominant deployment architecture for information systems in the 1990s. During the first phase, in the mid 1980s, organizations began evaluating client/server computing, by building prototypes and simple systems to validate the concept. This typically consisted of a small number of homogeneous clients connected to a server for file and print sharing.

PILOT CLIENT/SERVER



- (2) In the late 1980s, as the price/performance and benefits became apparent, Fortune 1000 organizations began deploying client/server applications at the department level. LAN-based computing became pervasive and provided the impetus to a host of new technologies, including GUIs, RDBMS, and powerful Unix servers. The typical configuration for these early client/server systems was PC LANs connected to a departmental server.

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(3)

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Microsoft, OSF

CONTINUED FROM PAGE 85

the copies of software is worth money to somebody," Bennett explained. "You've got to count noses and ensure it as you go or you'll end up with millions of dollars of bogus software." Incoherent replication of software would replicate costly data errors, he noted.

Users at large open systems sites say allowing support technicians to do in-person software distribution using floppy disks or CD-ROMs is time-consuming.

"You can't have all your users doing their own software installs because they can make mistakes," said David Pensak, advisor for computing technology at Dupont Co. in Wilmington, Del., which has hundreds of distributed Unix computers. "We have a few support people who go around and do the installs. They have to feed the floppies into the machines, and it's terribly inefficient."

Some users said they would prefer an electronic update utility and would consider using communications networks such as the Internet for that purpose. Others think Internet updates would be impractical, given the burden they would place on network traffic.

Who's got what

Kash's Harry Food Stores, Inc. in Tampa, Fla., uses a central software server to update software on remote Sun machines. But the grocery chain plans to evaluate OSF/DME software distribution services, provided Sun supports them through its ONC+ networking environment, said Jim Silkenbender, director of systems development at the chain.

"Right now, we have software in one set of directories," he said, "and when users log on, the file is automatically downloaded to their machine. With DME, you'll know what users are running the software, and who has what release."

Many users still resort to manual software distribution methods, using people to carry out updates that will be handled automatically with the Hermes and OSF/DME systems.

"We do software distribution by hand," said Bruce Campbell, a project manager at BC TEL, a Canadian phone company in Burnaby, British Columbia, that has dozens of IBM RS/6000 Unix servers. "A central server dials up remote machines over leased lines, and downloads the software to them."

In the future, he said, "It would be great to be able to say, 'Here's a new software load and here's where it needs to be, and let me know what doesn't work.'"

Part of the package

Many users said they think a software distribution utility should be delivered as part of a systems management framework supplied by vendors such as IBM, Hewlett-Packard Co., Digital Equipment Corp. and Sun.

These Unix vendors may yet adopt the OSF software distribution utility. Industry analysts said, once it ships to systems vendors later this year. But users who

plan to install Microsoft Windows NT servers are banking on Microsoft's Hermes utility, which will distribute software throughout a client/server network, based on addresses held in a central database.

Microsoft managers are promoting Hermes, an unannounced but often decried product that Microsoft plans to ship by mid-1994, as easy to use. "When you want to change the version of the application, all you have to do is

'point' at a new server," said Mike Nash, product manager for Windows NT. "The idea is that if you can do it once, you can do it for everybody."

That allows IS managers to appoint a few system administrators to do software updates. Microsoft told users at the Network '93 trade show that Hermes would manage Microsoft software: more than 20 vendors said they would support Hermes with their own network management software [CW, Oct. 11].

To reach into open systems networks, Hermes will have to be made to work with the OSF's Distributed Computing Environment (DCE) architecture, analysts said. Nash said that will be possible through Hermes' planned compatibility with DCE's remote procedure calls. Now, Hermes supports Windows NT servers, including Digital's Alpha workstations and Windows NT machines from Sequent Computer Systems, Inc., Compaq Computer Corp. and AST Research, Inc.

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Other features include automatic transfer to bypass to protect the load from internal system failures and overloads, three-way inverter protection, an input wiring fault indicator and selectable auto or manual restart. PowerMate XL is available in 650 VA, 800 VA and 1100 VA models.

Prices start at \$249.

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Instrumental, Inc. has announced Version 2.0 of PerfStat, Unix performance monitoring software for Cray Research, Inc. systems.

According to the Minneapolis-based company, PerfStat 2.0 is able to collect any specified performance data in a running system, including data gener-

ated by user applications.

The product employs a client/server architecture to gather, interpret and graph real-time and historical system, application and process-level data.

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Four Seasons Software has introduced SuperNova, a product that provides access to the DB2/4000 database from IBM clients.

According to the Edison, N.J. company, SuperNova is a database and platform-independent fourth-generation language application development environment that can construct Open Software Foundation Motif applications to run on DB2/4000.

The product can also help build the client portion of a client/server application that interacts with a DB2/4000 database server.

SuperNova licenses range from \$990 to \$100,000 per computer, depending on the size of the processor and the number of users.

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Enterprise Research, Inc. (ERI) has released ERICCS, an integrated set of CICS management tools.

According to the Research Triangle Park, N.C. company, the product includes three tools: CICS-Lock, CICS-DupS and CICS-View.

CICS-Lock is a user-friendly replacement for CICS terminal time-out. On command, users can activate CICS-Lock by using a configurable hot key for user-initiated terminal lock.

CICS-DupS is a tool that controls the number of concurrent CICS sessions that are permitted to a single-user identification.

CICS-View is a session status monitor for the CICS system administrator or help desk staff. CICS-View displays data in user activity tables and provides built-in functions to support problem resolution.

ERICCS requires MVS/3A, MVS/ESA, CICS 2.1 or above and RACF 1.7 or above. The MVS price for a set of all three tools is \$7,500 per CPU for a perpetual user license.

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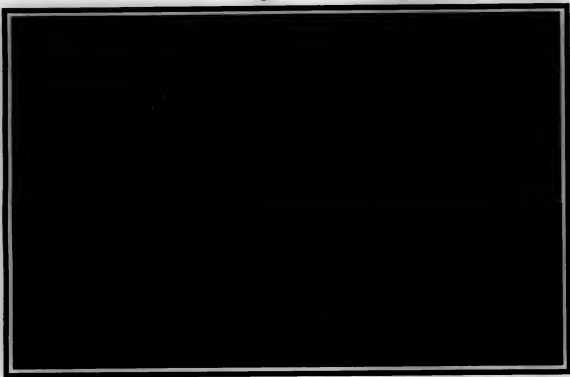
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High-end tools arrive to applause

By Melinda-Carol Ballo

Seeking to take advantage of a developer population that is beginning to hit the wall with the current crop of client/server tools, companies ranging from fourth-generation language (4GL) purveyors to traditional mainframe computer-aided software engineering (CASE) suppliers to a new breed of vendors are leaping into the fray.

This month, for instance, saw the official unveiling of products from CASE vendor KnowledgeWare, Inc. and 4GL vendor Cognos Corp. (see stories pages 96 and 97). These followed announcements from Jynco, Inc. and Progress Software Corp. on the 4GL side and Texas Instruments, Inc. and Andersen Consulting on the CASE side during the past several months, to name a few (see chart).

IBM announced its own graphical tools last week. These include VisualAge, a visual development package known by the code name "Camelot" that helps developers create applications by combining objects on screen. IBM also announced its intention to deliver two other tools: HighPoint, an application generator that runs on both host and PC platforms; and RedDiscovery, which allows developers to make a PC object out of Cobol code on the mainframe.

Before the end of the year, a new crop of client/server tool companies is expected to officially unveil products, among

them Dynasty Technologies, Inc. in Naperville, Ill., and Forte Software, Inc. in Oakland, Calif. (CW, March 1).

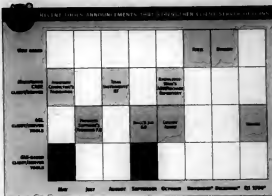
Developers at major corporate sites, meanwhile, are beginning to make plans to move beyond early prototyping and decision-support types of client/server application development to include mission-critical applications. But to do so with lower-end products would be a chaotic and uncertain business, according to developers and industry analysts.

New kinds of tools are needed to handle infrastructure creation, security, data- and transaction-processing management, versioning, the incorporation of business rules into application design and other critical issues.

Trying to create complex client/server applications without such capabilities is not something that Sikorsky Aircraft Co., an aerospace firm in Stratford, Conn., was willing to try.

Sikorsky is building enterprise-wide client/server applications to manage data related to its customers and suppliers. According to Al Corvino, a specialist in advanced technology at Sikorsky, lower-end tools such as PowerSoft Corp.'s PowerBuilder are good for "spot applications," but "when it comes to widespread inheritance of those applications, we were afraid of bringing on problems," he said.

Among the main issues for Corvino are maintenance and parallel development. Sikorsky is evaluating tools that are expected to ship from Dynasty late this



*Project

year. They will allow him to store logic at the data level so that business rules, for instance, can be associated with the data. Developers will also be able to partition their applications across multiple clients and servers, he said.

No new problems, please

"If we're going to get involved with anything new, we want to be solving problems rather than getting into new ones," Corvino said. With the low-end tools, "people get fired up creating redundant data structures on different platforms, which could be 20 times more than they originally were on the mainframe."

David Hanlin, MIS director for Collier County in Naples, Fla., agreed. "End users want you to just jump into client/server, but we haven't had the tools to create the infrastructure to support it."

Jan Polish, associate director for architecture planning at Colgate U.S., a subsidiary of Colgate Palmolive Co. in New York, said, "You need to plan ahead

to create an infrastructure in order to build mission-critical client/server applications. We're a global company, and we need global standards. We're looking at how all the pieces fit together." Polish is examining a range of tools but has not yet decided what to use to make the push for Colgate.

On the other hand, customers should exercise caution before jumping too quickly into any of these products, according to Rich Finkelstein, president of Performance Computing, a Chicago consulting firm.

The issues of managing the software and of version control will remain problematic "for some time," Finkelstein said. "I suspect it will slow the adoption of client/server for large-scale applications."

Although the next generation of development tools will likely fix those problems, vendors' attempts to retrofit existing tools may lead to substandard products, he added.

HarborView promises visual development

By Melinda-Carol Ballo
MANCHESTER, MASS

For developers seeking to entice end users to do it themselves, start-up Harbor Software is shipping a new tool for visual development of client/server applications.

Harbor was founded by Interbase Software Corp. founder Jim Starkey. The firm's HarborView tool allows developers and end users alike to create applications using visual programming language. Applications are developed by building graphical representations of the procedures on the screen using icons, diagrams and templates rather than keywords,



HarborView lets developers build applications by creating diagrams and moving screens rather than writing code

semicolons and parentheses.

Analyst Judith Hurwitz, president of Hurwitz Consulting, said HarborView is a prelude to what will become a wave of development tools targeting end users.

"These new environments allow 'sophisticated end users to put the pieces together and sophisticated developers to do complex development more easily,' she said. 'With PowerBuilder and other visual tools, you must do a lot of coding in their scripting language.' But HarborView does not require knowledge of traditional programming languages or even fourth-generation languages, she said.

HarborView users define business

rules using visual templates first, and forms and reports are then automatically created from these rules.

To maintain HarborView applications or change them, developers change the picture or graphical representation; HarborView then automatically rebuilds the applications. Since no scripting language is required, end users can modify their own applications, Harbor officials said.

"There is really a great need to create facilities" to allow end users to develop and customize their own applications, said Mimmo Montanelli, systems manager at Lipper Analytical Services Corp. in Summit, N.J. He said that with HarborView, the information sys-

tem-builder, page 100

Vendor targets client/server

By Melinda Carol Bellis

KnowledgeWare, Inc. announced a trio of products earlier this month that target the development of complex, mission-critical client/server applications.

The new products include an agreement to resell the Rochade repository from R&Q, Inc. (CW, Sept. 13) and two tools—Application Development Workbench (ADW)/Workgroup Coordinator and ADW/Workgroup Manager—to help users access and coordinate multidivision projects.

With these, KnowledgeWare is attempting to manage the development process at three levels (see chart). The Coordinator allows multiple developers to access ADW encyclopedias and synchronize their work. The Manager comes into play when it is time to consolidate those separate encyclopedias in one place. It handles change management, security and impact analysis. The Manager's encyclopedias can, in turn, be consolidated into the Rochade repository.

These announcements come on the heels of other vendors also trying to address the high-end corporate development marketplace (see story page 95).

For its part, the Rochade repository will help control and manage multiple ADW encyclopedias and provide access to third-party tools, KnowledgeWare officials said.

While industry analysts praised the repository for the range of platforms on which it runs and its nonproprietary architecture, some said it is not yet proved for mission-critical, transaction-intensive applications.

According to Jim Sinar, analyst at Gartner Group, Inc., a Stamford, Conn., consultancy, work is moving ahead to "check the robustness" of Rochade and

links to ADW at a number of U.S. companies.

One beta user who has been testing Coordinator for about a month said it is a time-saver. "Our developers like being able to use just one encyclopedia as opposed to reconciling and consolidating several," said Byron Gustafson, corporate computer-aided software engineering administrator at Kirke-Van Orsdel, Inc., a third-party broker for insurance services.

ADW/Workgroup Coordinator is available now for \$10,000 per server. ADW/Workgroup Manager is scheduled for release in the first quarter of 1994; prices will be announced at that time.

AMS has suite deal: Reusable software

By Mitch Betts
ARLINGTON, VA

Just as its customers are re-engineering their operations, American Management Systems, Inc. (AMS) has re-engineered its library of reusable software modules to support the development of mission-critical client/server systems.

AMS is a software and services firm that offers its clients a mix of generic and customized software all wrapped up in a consulting contract. Previously, AMS' core software was focused on IBM mainframes, but last month AMS introduced a suite of integrated software building blocks for client/server systems.

The new suite, known as Core 2000 Foundation Software, provides reusable software modules for generic programming tasks such as database interaction, user interfaces and error correction. On top of that foundation, AMS and clients can build an applications layer for basic business functions, such as purchase orders and loan applications.

Then, these basic application programs, built with object-oriented programming, can be easily customized and reused, AMS officials said. The resulting applications can run on a variety of computing platforms (such as Unix and IBM's OS/2) and interoperate with other software, without the code being rewritten, according to Andy Baer, an AMS vice president and project manager for Core 2000.

AMS officials said their experience shows that more than half of all applications can be constructed from previously

developed blocks of code, and when that happens, programmer productivity jumps by 50% to 100%.

For users, the most noticeable improvement is that reusable code makes development projects go faster. For example, Columbia University in New York is using Core 2000 to re-engineer a facilities management system in just one year, said Mike Marinaccio, deputy vice president for administrative information systems.

"For a system this large and robust, it's been a remarkably rapid development cycle," Marinaccio said. The university hopes to someday rebuild all of its applications using Core 2000 as part of a drive toward open systems, he said.

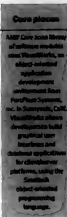
Core 2000 features the following major components:

- **Object Core Client/Server** for developing new systems using object-oriented programming and client/server technology.
- **Core Client/Server** for migrating existing mainframe systems to a client/server environment.
- **Core Enterprise** for systems using the mainframe as server.
- **Core Connect** for tying the

first three components together.

One interesting aspect of Core 2000 is that once AMS customers have the source code for a software module, they can reuse that code on non-AMS projects as well, Baer said.

AMS also modernized its systems development methodology to include new technologies. Object Methodology, for instance, provides a guide for the effective use of object technology in building large client/server systems, the vendor said.



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Symbolics bets on Alpha power

By Ellis Booker

Even after the rest of the world cheered the arrival of commercial 32-bit architectures, Symbolics, Inc. wanted more power to support Genera. Its integrated object-oriented LISP development environment.

Last week the Concord, Mass., firm said it has found the horsepower it needs in Digital Equipment Corp.'s Alpha chip, and it has begun shipping a version of Genera on the Alpha workstation running the Open Software Foundation's OS/2 operating environment.

Called Open Genera, the system manages the development and execution of application code in the same 64-bit ad-

dress space, enabling programmers to detect and fix errors faster. "Normally [these errors] aren't picked up until runtime," said Bill Clark, Symbolics director of marketing.

According to Clark, this sort of functionality was even beyond the power of 32-bit architectures, which is why, for the past three years, Symbolics has sold its own proprietary 48-bit processor, called Ivory, to run the Genera software. Ivory/Genera systems range in price from \$15,000 to \$60,000.

Open Genera, which requires a DEC 3000 AXP workstation, is priced at \$15,500 and is available now. Symbolics is offering the environment at a 20% discount through December 1994.

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Cognos to offer client/server tools

By Melinda-Carol Ballou

Cognos, Inc. earlier this month announced a push to client/server with its Axiact development tools, which integrate visual tools with an extensible application engine and a new multiter object-oriented repository.

Axiact manages the scaling of applications across the enterprise to hundreds of users to address the needs of high-end client/server development, company officials said. New Axiact Professional tools will allow developers to build on-line transaction processing applications visually, said Hans Gellman, Cognos' marketing director for client/server tools.

Based on a three-tiered architecture, Axiact separates the presentation, the application logic and the data access logic. These different components can then physically reside on three separate processors, officials said.

The presentation layer will run on Windows and Macintosh clients, while the application engine will run on mobile and networked PCs, as well as Unix and Digital Equipment Corp. VMS servers.

Databases supported through native application programming interfaces include Rdbase, Inc.'s SQL Server, Borland International, Inc.'s Interbase and Oracle Corp.'s XBase. Axiact also supports the Open Database Connectivity standard and will support Microsoft Corp.'s Object Linking and Embedding 2.0.

Features supported by Axiact include the following:

- Visual development using Cognos' existing PowerPlay decision support and Impromptu query and reporting tools.
- Methodologies, including rapid iterative development and rapid application development.
- Automated maintenance for impact

analysis reports and cross-referencing. Cognos users responded enthusiastically to the idea of being able to extend the capabilities of the Powerhouse fourth-generation language out to client/server environments.

"We're just moving to client/server now and Axiact is very interesting," said Byron Welch, systems analyst at the As-

sociation of American Medical Colleges in Washington. Welch's organization manages the MCAT medical examinations and sends out results for roughly 20,000 applicants to each of 10 to 20 medical schools. "For this mission-critical data we need tools that are rock solid... not merely [graphical user interface] tools."

The Windows-based developer's kit will ship in April and prices will range from \$3,900 to \$5,000. An Axiact end-user license with access to Impromptu and PowerPlay will cost around \$1,000.

Axiact will ship on Intel Corp. platforms running Windows with Unix or DOS and Digital VMS servers during the first half of 1994. Support for IBM's AS/400 and Hewlett-Packard Co.'s MPE/iX servers will follow later next year.

Windows training critical skill for



HarborView

CONTINUED FROM PAGE 86

tems group can put together building blocks and make them available as "Legos" to end users, who can then use HarborView to create what they need.

Adarsh Master, project engineer at Inland Steel Co., concurred. "Why give the control to the end users? The simple answer is money," he said. "Fifty percent to 60% of the work we do is end user-related. If we can take that work and give it to the end users themselves, it cuts way down on the development costs." The end users benefit, he said, "because they get the screens and the reports they wanted because they did it themselves."

HarborView is shipping on Unix workstations from Hewlett-Packard Co., Sun Microsystems, Inc. and IBM as well as Digital Equipment Corp.'s VMS systems and The Santa Cruz Operation's SCO Unix PCs. It is priced at \$3,900 for a development license. Drivers for Oracle Corp. databases will be available later this year and will cost \$700.

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LBMS smoothes link to PowerBuilder

By Melinda Carol Bollen

LBMS, Inc. is releasing a new version of a gateway that links its own System Engineer (SE) design tool and Powersoft Corp.'s PowerBuilder.

While at least 20 other companies provide interfaces between a range of other development tools and PowerBuilder,

this is said to be the first to support bidirectional exchange of data via a central repository, and the first to support PowerBuilder 3.0, the latest release of Powersoft's tool, officials at both firms said.

Some LBMS users seem eager to get hold of this new version.

Kay Wise, program analyst at First Data Corp., a credit-card firm in Omaha,

said the bidirectional support will be helpful. Wise's group does its design work with LBMS and then uses PowerBuilder to create applications.

"With the previous version, we could export files [to PowerBuilder] but it was awkward. This should be much smoother," she said. "We'll also be able to model inheritance of Windows within Power-

has become a growing people.

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RESKILLING FOR WINDOWS



Source: LBMS, Inc.

DB Clark, Steve Hunsell

Builder and manage security for our applications from within PowerBuilder." Before this release, Wise said, the company did not have a single place to map out security in advance as to who had access to what screens, for instance.

Graphical user interface objects created in PowerBuilder 3.0 can be stored in SE 3.0's repository, where developers have access to version control, configuration management and security. LBMS SE/Star and Powersoft's application programming interfaces are used to handle the bidirectional transfer of the objects.

Two ways better than one


Previous versions of the gateway supported only file export. Now, developers can do work "live" in SE and in PowerBuilder at the same time. They can open up PowerBuilder, launch SE from an icon on the core panel in PowerBuilder, create the design for an application and then click a button to return to PowerBuilder.

The results of the design will then be in PowerBuilder, according to Bill Critch, director of business and alliance programs at Powersoft. Developers can also reverse-engineer graphical design models in SE by reading PowerBuilder applications.

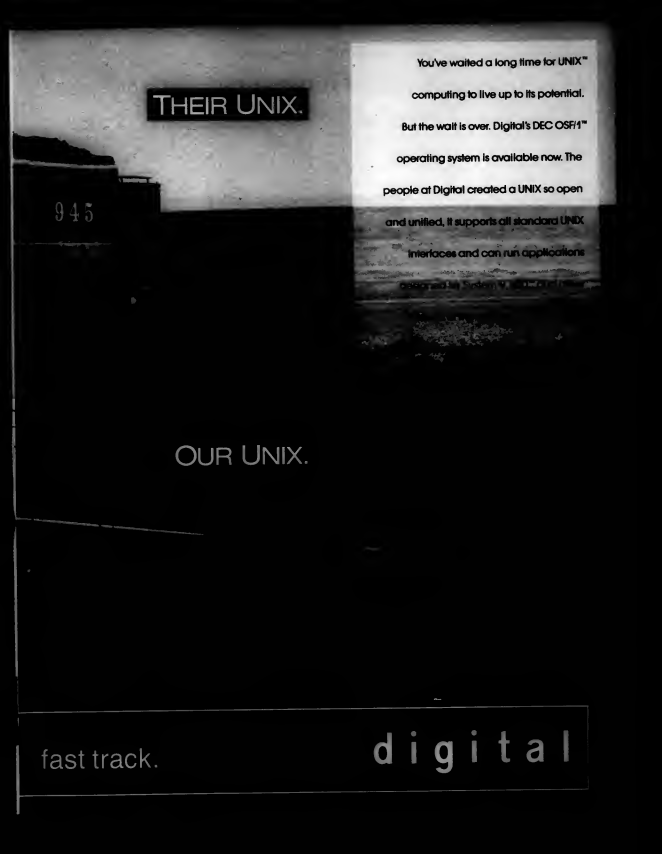
Powersoft officials said links to products from other vendors will be out by the beginning of 1994 with interfaces to PowerBuilder 3.0, including links to KnowledgeWare Corp.'s Application Development Workbench and Intersync Corp.'s PWS. Last week, Fujitsu Software Systems, Inc. released links to PowerBuilder and Gupta Corp.'s SQL Windows.

SE/Open for PowerBuilder 3.0 will be available in early-release form in the fourth quarter. Prices will be announced at that time.

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Q&E tool sings Visual Basic tune

By Michael Vizard
RALEIGH, N.C.

Q+E Software, Inc. has enhanced its client/server application development tool for Visual Basic with, among other features, support for Microsoft Corp.'s Open Database Connectivity standard, a widely supported implementation of the SQL

Access group standard.

Multilink/VB, the enhanced Q+E tool, gives corporate developers a way to link client applications written in Visual Basic with data stored in SQL databases.

"I'd say it cut down about 70% of the work associated with direct access to a SQL database," said Jack Crawford, director of information systems at Analytic

Technologies, Inc. in San Diego.

Currently, Analytic Technologies has about 420 users in seven locations running Visual Basic and Oracle Corp.'s SQLForms applications side by side under Windows and accessing the same data in an Oracle database.

Crawford, however, plans to replace the SQLForms applications with the

more flexible Visual Basic applications. Visual Basic "allows us to package reusable code into objects. Two years ago I wouldn't have attempted this, but the third-party tools around Visual Basic are really making all this possible," Crawford said, adding that the Q+E tools were even robust enough for him to incorporate a horizontal scroll capability into his applications.

Multilink/VB, which supports 20 database drivers, is priced at \$399.

Briefs

Tools, tools everywhere

Times Instruments, Inc.'s computer-aided software engineering workbench can now build applications for Inetware Software, Inc.'s *OutLine* database. . . . Developers of embedded systems will be able to use W.I. Corp.'s *IN-Driver*, an interface builder, with *Ready Systems'* *Spectra* tool kit.

Workbench for RS/6000

IBM will include Micro Focus, Inc. tools with its developer's workbench for the RS/6000 Unix computer. The workbench, called *Cobol Powerbench*, has development and maintenance tools including those for the management, program editing and debugging. Separately, Micro Focus said it has struck a joint development deal with Hybase, Inc. to integrate its Cobol development software with Hybase's SQL Server database.

Auto auditing

Price Waterhouse was due to launch last week an automated auditing system that was developed using object-oriented technology from Inetware International, Inc. The system, which has been adopted by UNX Corp., is intended to allow auditors to share information more easily.

HP cracks up OpenOODS

Microsoft Portland Co. has ported its Unix-based object-oriented database, OpenOODS, to run on Sun Microsystems, Inc. workstations. Other enhancements include the ability to access legacy data via Inetware Builders, Inc.'s *ETDA/SQL* package. Pricing for OpenOODS has been changed to a per-year lease of \$1,800 to \$5,000 per user.

Three's company

Three partners — Interactive Development Instruments, Inc., the Advanced Concepts Center of Martin Marietta Corp. and General Electric Co.'s Corporate Research and Development Center — have teamed up to provide object-oriented development software for Unix.

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Application Development

Empress Software, Inc. has introduced Version 6.4 of its Empress relational database management system (RDBMS) and fourth-generation language (4GL), which features Dynamic SQL that is compliant with the ANSI SQL:2 standard. According to the Greenbelt, Md., company, Dynamic SQL is implemented as an extension of the C precompiler.

Features such as a C-callable RDBMS kernel, 4GL application generator and full-function report writer are included.

Empress offers multimedia data types and object-oriented capabilities. It produces high-performance applications that can be prototyped, developed and executed in local or distributed mode with true location independence, the company said.

Pricing for Version 6.4 of the Empress RDBMS ranges from \$3,900 to \$500,000.

The Dynamic SQL costs from \$1,000 to \$200,000.

► **Empress Software**
(301) 220-1919

National Information Systems, Inc. has announced Accent San Transition Pack (STP) Version 2.0, an OpenLook-to-Motif source code translator.

Accent STP was designed for Sun Microsystems, Inc. developers who intend to migrate their applications to the Open

Software Foundation's Motif.

According to the San Jose, Calif., company, Accent STP translates 80% to 100% of the C or C++ language application source code generated by OLIT, XView or Devguide GIL files, including header files, where there are equivalent facilities provided in Motif.

Other features include the TTY Widget, drag-and-drop capabilities and international support.

Accent STP is available in four modules. Devguide Conversion, XView Conversion and OLIT Conversion cost \$4,995 each. The WindowMaker GUI Editor is priced at \$1,495.

► **National Information Systems**
(408) 965-1100

Corporate Computing, Inc. has introduced RadPath, a Windows-based software development product designed to help organizations develop graphical user interface client/server applications.

According to the Bannockburn, Ill., company, RadPath provides clear, easily used paths to deliver "high-quality" applications.

RadPath is a development methodology that provides on-line check lists to ensure consistent software development processes. The product includes three paths — Infrastructure, Management and Development — that were designed to define optional required tasks.

RadPath runs under Windows 3.1 and can run stand-alone or on a LAN.

RadPath costs \$4,995 per manager and \$895 per developer.

► **Corporate Computing**

(708) 374-1886

Product shorts

Greenleaf Software, Inc. is scheduled in December to ship Greenleaf ArchiveLib, a Windows-compatible data compression and archive library for C and C++ programmers. ArchiveLib is an object-oriented data compression runtime library. Equivalent C functions for C developers are included that allow developers to compress ASCII or binary data into an archive for storage. The Windows product can also run in the DOS operating environment. Cost: \$279. Greenleaf Software, Dallas (214) 248-2561. Spectrum Systems, Inc. has announced Objectbase, an object-oriented C++ class library for relational databases, that allows tables or groups of tables to be accessed as objects. Cost: starts at \$899. Spectrum Systems, Schaumburg, Ill. (708) 530-5797.

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► **WELA'S KERRY BURL:** It's still unclear if in-store CAD system will boost the retailer's sales

Everybody "pays lip service to customer service, but the fact is that only a few companies do it really well," observes Dick Lancioni, a professor of marketing at Temple University in Philadelphia and president of Customer Service International, Inc., a Warminster, Pa.-based consulting company.

Anyone who has waited on hold for minutes knows that customer service is often an oxymoron in the business world. Yet it seems every manufacturer, bank and retailer touts excellent customer service as one of its key competitive weapons.

In some cases, the reason companies fail to deliver good customer service is economics. "Some com-

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Are you being **DISSERVED?**

**THE ROAD TO CUSTOMER SERVICE HELL IS OFTEN
PAVED WITH INFORMATION TECHNOLOGY**

By Julia King

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FAST

Customer service

CONTINUED FROM PAGE 107

panies just don't have a lot of dollars to throw at customer service," Lancelotti says.

But often, inadequate customer service is rooted in poorly applied information technology.

Many companies regularly conduct surveys to learn what customers think of their products. But few take readings on how buyers rate their customer service, according to Lancelotti. Surveying customers or conducting trials before a new information technology-based customer service is initiated can help information technology managers assess how much customers are willing to pay for a new service, or how many are willing to use it.

Lancelotti recommends surveying not only what customers need, but what IT technologies they would be willing to accept.

For example, executives at Safeway Stores, Inc., an 1,100-store supermarket chain based in Itasca, Md., thought shoppers in a hurry might find it convenient to check out their own groceries with the help of an automated point-of-sale system. A six-month trial at one of Safeway's busiest stores, located near Washington in Prince George's County, Md., convinced them otherwise. Only 15% of the store's customers used the equipment. The system was removed, and there are no plans to resurrect it, according to Safeway's customer service spokesman, Larry Johnson.



"There was a lack of trust and understanding [on the part of customers]," Johnson says. "The system worked, but it was just a fear of the technology."

Information technology managers should therefore beware: Lending the charge toward improved customer service involves much more than installing an 800 number or tracking customer complaints. Complex questions with complex answers must be addressed up-front, including the following:

- What do your customers want and how does this compare with how your company defines customer service?
- Is it delivering services that will delight customers, or is the real goal boosting internal efficiency?
- Are customers ready for information technology-based services?

Experts advise applying the golden rule of any effective customer service operation first: Know your customer. But there's a corollary rule IT managers should keep in mind: Know what your customers are willing to pay for and how that impacts your bottom line.

At Ikea North America, based in Plymouth Meeting, Pa., customers want affordable prices on the furniture and other home accessories that the Swedish-owned company sells at 30 stores throughout the U.S. and Canada.

"If we offer too many services, you as a customer pay for it," explains Rich D'Amico, Ikea's manager of new business development. "And rather than pay higher prices, customers have told us over and over again that they prefer to do things themselves."

Consequently, the retailer's chief customer service challenge is to strike a careful balance between keeping prices low and providing shopper-friendly services.

Ikea provides customers with play areas for children, facilities for warming baby bottles and changing diapers, and free use of wheelchairs, strollers and roof racks. The company also provides a free children's car service between New York and its Elizabeth, N.J., store.

Similarly, Ikea is testing an information technology-based service it provides at no cost to its customers: a computer-aided design (CAD) system that customers can use to diagram kitchen floor plans.

Might the CAD system upset the balance between service and cost? IS director Kerry Ruhl isn't sure. So far, it's unclear whether the system generates more sales, which

The best customer service applications can be the ones customers never see.

QUIET DIPLOMACY

Customers may never deal with a company's most effective customer service applications. Harley-Davidson relies extensively on systems that work behind the scenes to improve overall product quality and customer satisfaction, says information systems director Rich Kolbe.

One such application gives product designers and engineers access to information about problems with previous designs by linking warranty data into Harley-Davidson's manufacturing and engineering databases. Engineers use this data to track deviations and correct recurring problems.

Another application enables Harley-Davidson's telephone customer service representatives to send product literature prompts to Harley Owners Group members. The representative can print out an address label with just two keystrokes, then snap the label on the requested literature and put it in the mail—all while the customer is still on the phone.

"A little nudge like that goes a long way to providing good customer service," Kolbe says. "Customers get a prompt response without our people having to take and key in address information." —Julia King

the company needs to keep prices competitive, he says.

Good customer service and improved productivity are by no means incompatible, experts say.

For example, the U.S. Social Security Administration reduced operating costs by 20% under various customer service initiatives, such as installing a nationwide toll-free information service and providing service representatives with access to on-line databases, according to Renny Davidson, the SSA's deputy commissioner for systems.

But all too often, technology-based services are installed not with customers in mind but as a means to improve efficiency and reduce overall operating costs.

"One of the biggest mistakes companies make is imposing technology on external customers for internal productivity," says Richard Whiteley, president of The Forum Corp., a Boston consultancy, and author of *The Customer Drives Computer: From Talk to Action*.

When management makes that mistake, the result can be a customer service application that doesn't work. In one case, a company that had been successful in selling Milwaukee-based motorcycle manufacturer Harley-Davidson, Inc.

"We tried a phone-mail system application to handle requests for information, but it was quickly ripped out because we learned that our customers were not interested in pushing buttons," says IS director Rich Kolbe.

"In general, Harley riders are more high-tech than high-tech, so now we tend to use information technology in customer contact applications very sparingly," he says. "The phone-mail system is an example of where a

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Companies need to learn from their noncustomers, too.

LOYALTY LOST


One important group that companies need to survey is noncustomers, notes David Reibstein, a professor of marketing at the University of Pennsylvania's Wharton Business School. However, even those companies that do conduct customer satisfaction surveys mistakenly tend to exclude noncustomers.

"I think there is a sincere effort by some companies to measure customer satisfaction, but the problem is they never look at what it is they are not providing to people who have rejected them and gone to somebody else," Reibstein says. "For example, Southwestern Bell Telephone Co. calls up customers [after a sale] to see how they did. But what Southwestern Bell should do is call up former customers and find out why they switched," he notes.

Southwestern Bell does send out "loyalty surveys," which ask current customers what the company can do to keep their business. But it does not survey former or noncustomers, says Linda Gelfer, a spokeswoman at Southwestern Bell in St. Louis.

—Julia King

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Instead the Midwest Securities Trust Company turned to HP's UNIX-based client/server technology, the ⁴i platform for Informix's relational database management software.

"We were able to complete the system within three months, using one developer," Donald S. Elko said. "It provides responses nearly ten times faster than the mainframe. They're online, real-time rather than paper-based. And the HP 9000 system only cost us a fraction of what we spent on our last mainframe upgrade."

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Climbing the CIO ladder

By Leslie Galt

If you're looking for leadership training that will groom you for the chief information officer's spot, the pickings are slim.

Only two organizations, the Society for Information Management (SIM) and the College of Healthcare Information Management Executives (CHIME), offer management training designed for information systems executives with CIO aspirations.

SIM sponsors what it calls Chapter-Hosted Learning Forums focused on individual development and learning, says Richard Dooley, president of The Dooley Group in Riverwoods, Ill., and a founding member of SIM. In seven two-day workshops over the course of a year, attendees cover such topics as negotiating, business ethics, career planning, team building and the ideal CIO.

"Rather than talk about re-engineering, we're focusing on people, getting them to exercise their capacity to learn and grow and change," Dooley says. "Learning is learning and learning to change is important today because the half-life of what you know is very short."

SIM forums offer the rare opportunity to ask questions of the CIOs. "We had a unique access to

these CIOs, to ask questions about their careers like, 'Did you plan out where you wanted to end up, or did you just land there?'" says one participant, Helen Conway, director of applications development at Semmi Information Systems in Akron, Ohio. "Or how they make decisions about things, like a reorganization — 'How did you decide who to keep and who to cut?' — things you could never ask in a more public forum."

SIM held its first Chapter-Hosted Learning Forum in Chicago in the spring of 1992. The Salt Lake City and Washington chapters are in the midst of their first forums and the Boston forum will begin in January. A second Chicago-hosted forum will start in October 1994.

Specific training

CHIME targets CIO training for a specific field. The organization hosts a two-year, week-long training conference titled "CIO Leadership Skills for the Era of Healthcare Reform" at the University of Michigan in Ann Arbor.

"The CHIME conferences steer potential CIOs away from the nuts and bolts of technology in favor of how technology can be 'harnessed' to serve health care organizations' strategic objectives," says Rich Correll, president of CHIME.

"It's the CIO's role to bridge the world of high tech and its special-

ists to the boardroom."

CIO candidates from hospitals, health maintenance organizations and health care systems get a primer on the health care industry as a business. They learn where the industry is headed with regard to the Clinton administration's health care reform package.

Other sessions, led by top health care CIOs such as John Glaeser, vice president of information services at Brigham and Women's Hospital in Boston, and Larry Grandis, vice president of information systems at Intermountain Health Care, Inc. in Salt Lake City, address such issues as managed care, developing clinician systems and the future role of technology in health care.

As with the SIM forums, group discussion plays a large part in the CHIME conference, including an interactive problem-solving exercise in which attendees break into small groups to tackle hypothetical management problems.

Robert Pickton, vice president of IS and CIO of EHS Health Care, credits the CHIME program with enabling him to parlay his CIO experience at a small North Carolina hospital into the top spot at EHS, a Chicago-based health care system that encompasses hospitals, extended-care centers, physicians' offices and other facilities.

Galt is a free-lance writer in New York.

So you want to be an IS star?

TRAINING PROGRAMS FOR FUTURE CIOs

SIM Society for Information Management (SIM) chapter-hosted learning forums

WHERE Chicago, Salt Lake City, Washington, Boston

WHEN January 1994 - January 1995 in Boston; October 1994 - October 1995 in Chicago; in progress in Salt Lake City and Washington. Call local SIM chapter for information on future learning forums in your area.

DESCRIPTION Seven two-day workshops held over the course of one year. Attendees meet to SIM members, and be sponsored by a SIM member and a host chapter and must be targeted for a leadership position in their organizations.

COST \$4,000

CONTACT SIM International, Chicago, Ill., Attn: Steve Rappert, (312) 644-0824, ext. 2767

CHIME College of Healthcare Information Management & Executives (CHIME) "CIO Leadership Skills for the Era of Healthcare Reform" course for IS executives

WHERE University of Michigan at Ann Arbor

WHEN November 15-25, 1993. The course will be offered twice in 1994.

DESCRIPTION One week. Attendees should be prospective CIOs or CIOs in the health care industry.

COST \$1,000; \$1,500 for CHIME members

CONTACT CHIME, Ann Arbor, Mich., (734) 665-0000

Scanners and stories: How marketers really use data

David Goldstein

A little knowledge about what marketers do with data can go a long way toward improving how information systems organizations work with marketing organizations.

With a little help and understanding from IS, marketers will be able to do more with the data they use in story-telling.

All of us are storytellers. Much of our casual conversation at work and at home involves sharing stories about our boss or the latest accomplishments of our children. It should come as no surprise then that when marketing managers are confronted with a great deal of data and very little time to analyze it, they use this data to create stories about what has happened and use it to support their opinions about what ought to be done.

But what may be surprising is that managers generally rely on simple anal-

yses of a very small subset of the hundreds of megabytes of data available to them. A recent study of what marketing managers do with point-of-sale (POS) scanner data showed that their preexisting knowledge — their stories and hunches — guides the data they choose to examine. They rarely run regressions or develop statistical models. This may be because the managers analyze data to confirm themselves and others that their prior knowledge is true.

After marketing managers receive a new set of POS scanner data, they review the data to see if it fits their stories, focusing on key issues — the impact of a new competitor or a recent promotion. If the data fits their stories, the managers say they understand it and do nothing.

If the data does not fit their stories, managers explore further, with the goal of modifying their stories.

Take the case of a product manager who was tracking a competitor's new product. When she examined the previous month's supermarket scanner data, she was surprised to find that the sales per store of her competitor's product had declined and it had not been introduced into any new markets.

She informed her boss that the competitor was going to discontinue the product. She then created a story for her salespeople to tell their buyers. His message was, "get the competitor's product off the shelf and replace it with more of ours." With the scanner data, she created a chart to support the story.

Fear prompts

Another product manager was surprised that her last product promotion was not as successful as previous ones. She assumed this was due to an increase in store-brand sales. Using scanner data, she compared the promotion's effectiveness in markets with strong and weak store brands. While store-brand sales had some impact on the promotion, she found large differences in regions with strong store brands.

She studied more data to determine the cause of those differences and found that when store-brand promotions occurred soon before her promotion, her promotion was much less effective.

Of course, managers do learn a great deal from such analyses of scanner data. Since they can more rapidly identify problems and opportunities, they can ad-

just marketing tactics more frequently and can communicate more effectively to their customers. And they can provide data to back up the stories they tell.

Marketing managers need to integrate data from multiple sources — internally generated and purchased. For example, a manager guessing that a regional downturn in market share is the result of an inventory shortage at a distribution center would need to examine scanner and distribution data for verification.

Unfortunately, few IS organizations have worked with purchased data, and even internally generated data are difficult to combine. If IS could provide marketing managers with simple, flexible tools that integrate and provide easy access to data sources, marketing managers could explore their hunches more quickly.

In addition, expert systems that identify anomalies in detailed market-level data could help managers find problems that might otherwise go unnoticed.

Goldstein is an assistant professor of information systems at the Boston University School of Management and is affiliated with the Center for Information Systems Research at MIT. His Internet address is dgoldesti@cs.bu.edu.



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Customer service

CONTINUED FROM PAGE 108

system was clearly more efficient, but not more effective."

The issue of public acceptance of technology, and how much people will pay for it, comes up even in government circles.

Under a governmentwide customer service initiative known as Service to the

Citizen, the federal government's General Services Administration (GSA) is considering an application whereby citizens could apply for a Social Security card or copy of a birth certificate by calling a 24-hour toll-free number.

"But we have to ask ourselves whether people will use it and whether it's worth it to make this service available at 3:00 in the morning," says Tony Tremble, Service to the Citizens' project manager.

"Should we establish a minimum level

of service, or charge people extra for after-hours service? We need to know how much in dollars customers are willing to pay to have customer service as good as American Express," he says.

Currently, he adds, individual agencies such as the Internal Revenue Service are surveying citizens to determine answers to these questions.

With so much that can go astray when applying technology to customer service, is there a principle for IS managers to

guide them when deciding whether or not to build a customer service application?

What It Comes Down To

The bottom line, Whiteley says, is that any organization, regardless of its line of business, cannot be customer-driven without the voice of the customer hardwired into the organization. As a result, "any technology that helps you understand what it is a customer wants will be a good investment," he says.

Unfortunately, too many organizations have invested in systems that focus primarily on measuring internal efficiency, Whiteley says. These include hardware and software to track the amount of time callers remain on hold or the number of calls processed in an hour, week or month. But if an organization is to be successful, it needs to shift its focus to what a customer actually wants. Only in this way can it provide service that will truly delight the customer.

King is a free-lance writer in Ridley Park, Pa.

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James Martin World Seminar, Los Angeles, Nov. 1-4 — Contact: Susan Levine, Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

Federal Imaging '95, Washington, Nov. 2-3 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

Winners'World Conference & Exhibition, Orlando, Fla., Nov. 5-4 — Contact: Interne Publishing (Cellular Business), Chicago, Ill. (312) 922-2420.

NOV. 7-NOV. 13

1995 InfoTech, Phoenix, Nov. 7-10 — Contact: DPMA, Park Ridge, Ill. (708) 925-4124.

Back to the Future with Macintosh 1995 Fall Conference, Orlando, Fla., Nov. 7-10 — Contact: Managing Apple Computers in Information Systems, Mason, Ohio (313) 366-7000.

Fourth International Conference on Applications of Software Measurement '95, Orlando, Fla., Nov. 7-11 — Contact: Applications of Software Measurement, Jacksonville, Fla. (904) 258-8639.

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The CW Guide to PC Databases

PC databases grow UP

earning respect

The leading PC databases scored above average in the following areas: (Ratings are based on a scale of 1 to 10, where 10 is best)

Ease of use	7.1
Portability	7.0
Reliability	6.8
Scalability (from personal to full-blown enterprise)	6.7

Source: Buyer's Satisfaction Scorecard

Base: 113

inside

PC possibilities
Some actual
enterprise
applications for
PC databases.
Page 119.



Buyers' Satisfaction Scorecard
Paradox, Access, FoxPro all rated
equally by users.
Page 128.



Firing Line
Users of Lotus Approach say it's easy to use, but it lags on query and reporting.
Page 133.

A

t one time, information systems managers scoffed at PC databases as insignificant 90-pound weaklings suitable only for running small, local applications, such as tracking leads from a marketing promotion. Of course, end users loved them because they could manage data without calling IS. But what did end users know about serious database development anyway?

Well, don't look now, but the 90-pound weakling is back — and it's bigger than ever. After a Windows-based regimen of database access tools, server connectivity, advanced visual programming tools and even object-oriented capabilities, PC databases are suddenly a strong option as client/server front ends. A new generation — Microsoft Corp.'s Access and FoxPro, Borland International, Inc.'s Paradox, Software Publishing Corp.'s Superbase, DataEase International, Inc.'s DataEase Express for Windows and Lotus Development Corp.'s Approach — has evolved into seri-

PC databases, page 118

STRONG CONNECTIONS TO SERVER DATABASES GIVE THE "LITTLE GUYS" A BIG ROLE IN THE ENTERPRISE. THEY'RE EVEN RUBBING SHOULDERS WITH CLIENT/SERVER TOOLS.

PC databases

CONTINUED FROM PAGE 117

ous development environments fit for accessing multiple databases on distributed platforms.

Databases are even challenging traditional fourth-generation language (4GL) tools, such as Gupta Corp.'s SQL/Windows and PowerSoft Corp.'s PowerBuilder, especially in giving small workgroups access to data residing in various places throughout the organization.

Such applications typically track things (like the vacation time taken by individuals in a department) and monitor information (such as maintenance scheduling on a fleet of trucks). They're applications that don't require a million-dollar IS solution but do demand a degree of sophistication.

For example, the Federal Aviation Administration uses a PC database in its work to certify the flight patterns of planes landing at U.S. airports. Each

the FDA, as was recently mandated.

Increasingly, applications such as these require data that isn't local. With the SQL capabilities of PC databases, a budget analyst, for instance, can send ad hoc queries directly to a DBS database, which will process the request and send back the results rather than download the entire file of expense data. Similarly, a human resources manager can access employee information on multiple databases as if he were accessing the local PC database.

The Windows interface has also done a lot for databases — more than for any other class of application. Closer integration with other desktop applications is possible via Object Linking and Embedding (OLE) and Dynamic Data Exchange (DDE). Windows databases can exchange data and interoperate with word processors and presentation programs to create impressive reports and merge letters and address lists. Or they can work with a spreadsheet where complex analysis and number-crunching is required.

ject-oriented, event-driven programming arena.

Both Access and Paradox for Windows are leading the charge to object technology, although neither is fully object-oriented. "I prefer to call [Paradox] object-based because it is not true to object principles. Still, it provides a big advantage over competing databases because it lets us do event programming," explains Bill Vannerson, a supervisor of user services at Blue Cross/Blue Shield Association in Chicago. Event-driven programming makes it possible for Blue Cross analysts and researchers to view health insurance data from a number of perspectives, changing their views on the fly.

End-user benefit

In spite of these myriad advances though, back-end connectivity still promises the biggest payback for most users. Users create the data request on the front end, often by pointing and clicking on the appropriate fields. The request is shipped off to a back-end database for processing. Only the results of the request, generally a small subset of the total data, are returned to the user. Local applications can further refine, manipulate and present the data on the PC. This saves the network from having to move around large extracts of data and saves IS from having to program every little request for a new look at the data.

The connectivity capabilities open up a whole new dimension. "With products like Microsoft Access, we're seeing PC databases move forward toward enterprise connectivity," says Peter Kartner, vice president of corporate computing at Aberdeen Group in Boston.

The leading products sport built-in drivers for specific SQL databases. Drivers free users and application developers from having to learn SQL. "Learning SQL can be a hard path to hoe, and it's a pretty limited language, so you really benefit from a front end," says Robert Marmico, a database application development consultant in Flemington, N.J. Marmico uses DataEase and its Microsoft SQL Server connectivity package to build applications for an insurance industry client. When the program executes, DataEase generates the required

PC databases, page 122

strengths

• PC databases are suitable for developing enterprise-wide applications in smaller companies or departmental applications in medium to large firms.

• They have significant advantages over their older mainframe and minicomputer counterparts in the areas of screen design, report writing and end-user analysis tools.

• They are capable of processing gigabytes of data and providing acceptable response time for up to 50 users.

weaknesses

• PC databases typically lack the level of security and data-integrity controls that one takes for granted on large systems. Of the major PC databases, transaction processing is available only on Microsoft's Access and Borland's dBase; database-level password schemes are available on Access, dBase and Borland's Paradox.

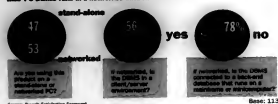
• Another shortcoming is the lack of support for multiprogrammer access. Although all of these products allow for multiprogrammer projects, there are no built-in facilities for version-control management, version control or the enforcement of coding standards. Because of the proprietary nature of most database development environments, third-party tools (typically targeted at products coded in C) will not fill the bill. For instance, productivity programming issues require tools that are integrated with the database engine and development languages.

• PC database performance begins to drop when transactions grow too large, but connectivity that is a combination of PC and LAN technology, not the database software itself.

— Mark Gerow

many not flying solo

Half of the Buyers' Satisfaction Survey respondents say their PC DBMS runs in a networked environment



year, the agency refies each flight pattern, 60,000 in all. It uses Software Publishing's Superbase in each of its seven regional offices to collect the information and monitor the certification process.

Ell Lilly & Co., an Indianapolis pharmaceuticals company, turned to Microsoft's Access to handle reporting to the Food and Drug Administration (FDA). With its database, the firm collects product and trial test data from different systems, organizes it, allows it to be viewed in various ways and submits it electronically to

Armed with these features, Ell Lilly, for example, can create executive information system types of applications that provide decision support to managers. These applications automatically access data, process it and display it in the desired form, complete with charts, spreadsheets and text that help convey the significance of the information quickly.

Before Windows, PC databases were procedure-driven. Now, driven by the requirements of the graphical user interface, they're moving squarely into the ob-

By Mark Gerow

It's happened — PC databases have become reliable tools in the information systems tool kit. Not by themselves, though. For developing demanding, enterprise-wide applications, these databases are best used in conjunction with more traditional information systems technology.

In fact, many of the solutions being created involve downloading and sorting through data from existing mainframe databases.

By themselves, the PC packages are more suitable for departmental or small business solutions.

The key questions that determine whether to use a PC database include the following:

• **Number of users:** I would hesitate to recommend a PC database for more than 50 concurrent users, but this is really a function of LAN technology today and not a specific limitation of PC database software.

• **Users' geographic dispersal:** The impact on performance is even greater over a wide-area network because line speeds are typically much lower than those found on the office LAN. Applications that run well on the office LAN can crawl when run over a WAN.

• **Volume of data:** The impact of database size varies widely, depending on the application. But with appropriate design (such as correct use of indexes, data access strategies, etc.), multigigabyte databases are reasonable. What's critical is the average size of information a user requests at one time. A database of 10 bytes is acceptable if the typical user needs to see only one 1K-byte record at a time.

• **Security requirements:** As with performance, security is as much a function of the network operating system as the database itself. Most PC databases have limited security features. Even those that do have security, such as Borland International, Inc.'s Paradox and dBase IV and Microsoft Corp.'s Access, may be thwarted by a determined intruder. Therefore, where ironclad security is a must, a client/server approach is preferred.

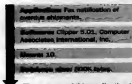
limits and possibilities

able. The data is then protected by the more advanced features of the back-end database, such as those from Oracle Corp. or Sybase, Inc.

• **Integrity requirements:** Integrity refers to the database's ability to keep users from violating the business rules embodied in the data. Of the top-tier PC databases, only Access and Paradox have entity and referential integrity checking built into the database itself.

Sample applications

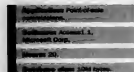
Here are three "typical" PC database applications. Note that they are integrated with and add value to information gathered from other (often mainframe) database systems. This isn't a true "client/server" approach, where core systems are moved to database servers and the PC front end has read and write access to the data. But because in these examples the transfer of data is one way, from the mainframe to the PC database, no redesign of existing systems is required.



The purpose of this application is to automate the notification of overdue orders. It saves one-half to one day per month at each of the client's purchasing sites.

The application downloads approximately 10,000 records from a mainframe manufacturing control system, formats the data and automatically sends a fax to each vendor with outstanding, overdue shipments.

As for the product used, Clipper is for professional programmers only. No editor, report writer or screen painter is provided. The learning curve is steep. CA is close to releasing a Windows successor to Clipper, called Visual Objects for Windows. As with Clipper, this product will be for the professional developer.



The company using this program sells only through distribution channels; therefore, it is critical for it to be the sales information received from distributors and value-added resellers (VARs) back to actual customers and sales representatives. Otherwise, the company does not know how much to pay its salespeople.

This application automates that function and also lets the company move information out to the regional sales offices and onto the notebook computers of the field sales force.

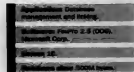
The application reads in ASCII files from 10 distributors, detailing monthly sales in the distributor's own unique format. Data for another 20 smaller distributors and VARs is manually entered into the database.

Data from the company's production scheduling system is also merged with this information and stored in the Access database.

The system then calculates and pays commissions to the outside sales force, reports actual sales through the distribution channel and identifies discrepancies between expected and reported sales by distributors.

This is an increasingly common situation:

the sharing of electronic data among a company, its suppliers and customers. Because PC databases are particularly strong in supporting various input formats, they're often the tool of choice for integrating data from multiple platforms.



It's often difficult to automatically identify related records in different databases. For example, "Acme Corp." in one table may be "ACME Corporation" in another.

This application was designed to cull data from six databases and apply an extensive set of rules to find logical matches between records.

To do this process, the application must download and process approximately 50 bytes of data from Oracle databases.

After matching is complete, the staff reviews a sample of the records to ensure they are correct.

Then an extract file of cross-references between records in the different source databases is sent to another division to be incorporated in a commercial product.

The application tests the upper limits of current PC database size. For example, processing takes 12 to 18 hours, which would not be acceptable for more time-sensitive applications. Once loaded, single-record response time is under three seconds.

Because most PC database products use the same method for indexing structured files, the single-record seek time will be roughly equivalent for all major PC database products.

Gerow is president of Megabase, Inc., a Mountain View, Calif., company that specializes in Windows and client/server database application design and implementation. He can be contacted at (415) 940-3575 or on CompuServe at 73257.3666.

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PC databases

CONTINUED FROM PAGE 118

SQL, even regenerating any triggers should the SQL table change.

For organizations with multiple back-end databases, however, a proliferation of drivers can quickly get out of hand. That's where middleware specifications such as Open Database Connectivity (ODBC) and Integrated Database API (IDAPI) come in.

ODBC and IDAPI allow programmers to write a single database call that can be understood and acted upon by any database that complies with that particular middleware application programming interface (API). Developers — power users or IS professionals — can create applications that access a multitude of databases without painstakingly writing low-level, database-specific SQL code for each database.

There are trade-offs, though. Database-specific drivers deliver better performance and allow you to take full advantage of all the specific features and capabilities of the particular back-end database. Middleware APIs add a processing layer, which slows performance and limits capabilities to a common denominator.

"Most of our developers don't use

ODBC or IDAPI. They aren't sure what the clear standard will finally look like, and they have to sacrifice some functionality because they can't use all the specific commands of the actual database," says Noah Rose, director of technology at CAPGemini America, Inc. in New York.

Most Windows databases offer or promise support for ODBC. Microsoft,

frame- and midrange-based databases with more cost-effective systems, such as Microsoft SQL Server.

ODBC has a rival in IDAPI, which was created by Borland, IBM, Novell, Inc. and WordPerfect Corp., mainly with the intention of blocking Microsoft from controlling key enabling technology in client/server computing, notes Judith

rely on ODBC for everything else. There isn't room for IDAPI," notes Donald DePalma, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Given the uncertainty, some vendors are hedging their bets. DataEase, for example, supports ODBC but has also developed its own API, called Prism. In fact, Prism offers one of the broadest sets of servers that can be accessed from within a PC database. The drawback, however, is that you must learn the proprietary Prism API.

Superbase offers a SQL connectivity library in the form of a set of Dynamic Link Libraries to access Microsoft's and Sybase's SQL Server, Oracle Corp.'s database, Gupta's SQLBase and IBM's DB2.

not mission-critical

A minority of buyers' Satisfaction Scorecard respondents ran mission-critical applications on PC DBMSs. A full quarter of the respondents reported they've experienced integrity problems



which developed the API, is pushing it hard. "Microsoft glossed the skills for ODBC in Access. It is very well supported," says David DeBrotta, information advisor at ISI Lilly. DeBrotta's group standardized on Access as part of its effort to speed end-user access to corporate data.

ODBC is the key to providing access to the variety of databases within ISI Lilly, but the API is still evolving. Once all the pieces are in place, however, DeBrotta envisions replacing ISI Lilly's IBM main-



Hurwitz, publisher of "Client/Server TwoWatch." IDAPI is positioned as a superset of ODBC, supporting ODBC and additional databases, most importantly, dBase. Except for the few differences in the databases supported, the two APIs do the same job essentially the same way.

User companies do not gain anything from having two competing APIs, so one or the other should eventually push its rival out. "Most vendors will provide direct support for Sybase, Oracle and DB2 and

Pushing the 4GLs

With Windows, connectivity capabilities and advanced visual programming languages, PC databases are starting to encroach on the 4GLs designed to develop database applications, such as PowerBuilder or SQLWindows, DePalma says.

"Starting" is the key word here. PC databases lack the more robust transaction processing and integrated data integrity features, such as two-phase commit. "We still use PowerBuilder for our bigger development projects. We're not sure how Paradox will behave in the enterprise environment, and we're concerned that IDAPI adds another layer,"

Vannerson says.

"When a group goes beyond 10 to 12 users, you probably need to go to the big databases and tools," advises Timothy Boudreau, associate partner at Andersen Consulting's New Age Systems group in Chicago.

In addition, Ross says PC databases suffer from performance problems because they lack the fine controls required to tune an application for client/server computing or to perform complex processes such as two-phase commit. He also is concerned that many of the PC databases, such as Paradox, are built on non-SQL engines. Although they can generate SQL commands, they pose a problem if you try to deploy the applications on other (non-Windows) platforms.

By comparison, tools such as SQL Windows offer more complete development environments that support multiple developers. They allow full use of triggers and stored procedures. The 4GLs also allow developers to drop down into third-generation languages when even greater control is required or for particularly complex processing, such as tricky mathematical computations.

There's no doubt, however, that Access and other databases will continue to close in on the 4GLs in some of these areas—and users stand to benefit from

PC databases, page 124

what the other guys are up to by Christopher O'Malley

With two PC database products each, Borland and Microsoft generate a lot of noise in the marketplace. However, other solid PC databases are available. Each of the following has distinct strengths and weaknesses, so be sure to choose a product appropriate for your needs:

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Alpha Five 3.0
Alpha Software Corp.
Bedford, Mass.

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- Improved relational features: real-time auditing and referential integrity
- Completely menu-driven application development (no coding required)
- Improved data-entry features, such as ability to enter data into more than one database from a single screen

- No Windows version until 1994

- A fast, small ODBC-based tool for small users

Approach 2.1
Lotus Development Corp.
Cambridge, Mass.

\$99 until end of the year; \$395 thereafter

- Supports ODBC for back-end connectivity
- Easy to use
- Ever-improving integration with other Lotus applications; SmartIcons added to interface

- No programming language. Not suited for heavy-duty application development
- No DOS version

- An easy-to-use front end provides and users with access to server data

Database Requestor 5.1
DataEase International, Inc.
Sturtevant, Conn.

\$395

- Very robust end-user database that supports desktop development
- Good integration with Windows for DOS; reports done from variety of sources
- "QueryWizard" feature pulls together fields, tables and calculations

- No programming language

- A robust enterprise development tool for Windows

R:Base 4.5
Macromin, Inc.
Bellevue, Wash.

\$795

- A mature, well-rounded DOS database
- Clearly a tool for serious application developers: robust relational engine, strong programming language
- Supports SQL

- No Windows version
- Menu-driven interface is dated
- Querying and indexing is improved but still slower than Paradox and dBase

- A heavy-duty alternative to dBase, Paradox or dBase for DOS

Access 3.0
Microsoft Publishing Corp.
Redmond, Wash.

\$795

- Simplicity of design: a database that has long programming language and a menu-driven interface that provides the user with
- Quick reports and query-by-example features
- Robust product that has been around longer than most Windows databases

- Windows version until 1994
- Not a speed demon

- A programming tool for Windows

Easy to use? Not exactly, but easier to use

PC databases owe a lot to Windows, not the least of which is a friendlier interface and simpler application development.

Ever since dBase, top-end PC databases have offered powerful programming languages that are perceived as difficult to use. Now, the new databases provide powerful programming and near-programming capabilities through

less complex macro and scripting capabilities and visual programming tools.

The visual programming tools make programming easier by replacing tedious coding with pointing and clicking.

Computer Associates International, Inc.'s CA-dBase 2.0 is a good example. CA-dBase provides a visual design feature for developing XBase applications

On a scale of 1 to 10

How easy is it to learn the visual programming tools?

How easy is it to learn the visual programming tools?

How easy is it to learn the visual programming tools?

7.4 for ease of use

for Windows. However, it still lets the programmer debug at the source code level. Microsoft Corp. also offers a version of Visual Basic in Access, a graphical programming language to create Windows front ends. Borland recently revamped its Paradox Application Language (PAL) as Object PAL with extensive object-like capabilities. And Software Publishing Corp.'s Superbase has Super Basic Language, which is similar to Visual Basic.

No matter what the vendors claim, however, these tools are still not for end users. They work best for professional programmers or highly capable power users. "Our users don't use Object PAL," says Bill Vannerson, supervisor of user services at Blue Cross/Blue Shield Association in Chicago. Instead the company trained two mainframe programmers in the language.

Lotus Development Corp.'s Approach is the exception. It lacks a formal programming language, but developers report they can still create substantial applications relying on the user interface to accomplish just about whatever they need.

"I can't do 100% of what I want with any of [the PC databases], but there are so many ways to trick Approach into doing what I need that it isn't a problem," says Michael Nelson, systems integration engineer at Computer Support Services in Falls Church, Va.

—Alan Radding



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PC databases

CONTINUED FROM PAGE 125

the competition.

For instance, Access already provides referential integrity for its native data at the engine level and allows users to define default values and validation rules to enforce data integrity when creating tables.

Through Access Basic, developers can use commit and rollback features and looking for transaction operations. As a result, "You're going to see the PC databases pushing the bigger database development products down in price," Eastman says. It's going to be a lot harder to ask, say, \$2,000 for SQL/Windows when you can get any of the top PC databases for less than \$500.

In response, the 4GL vendors are likely to boost the object capabilities of their tools, add even more transaction processing and configuration management/version control capabilities and expand their cross-platform capabilities to include multiple clients, servers and databases.

While nobody will mistake a PC database for a mainframe 4GL, PC database management systems have clearly established a place for themselves in client/server computing. As those products continue to mature and push the big boys further up the technology curve, users can only win.

Radding is a free-lance writer in Newton, Mass.

The database that won't go away

dBase — it's a character-based, procedural program in a world of objects and graphical user interfaces. It has endured a disastrous release (dBase IV 1.0), the collapse of its company (Ashio-Tate) and an agonizingly slow move to the Windows environment. Yet it still tops the market share charts.

"Our corporate PC standard is Paradox, but nobody is using it. The installed base is still dBase," says Nick Wulderk, assistant vice president at Marv & McLennan, Inc., a Pittsburgh insurance brokerage firm. Although it handles 95% of the work, dBase isn't relational, and it lacks built-in referential integrity, Wulderk says. "We use it for a lot of those quick and dirty applications, like claims-to-payment look-ups," he says.

Like Lotus Development Corp.'s 1-2-3, dBase applications are so entrenched in the corporate world that "it's not going to disappear anytime soon," says Peter Kastner at Aberdeen Group in Boston.

dBase holds down some pretty important applications. Almost every department at HCA, Johnson-Willis Hospital in Richmond, Va., has a valued application running on it. For David Love, director of quality resources, dBase keeps an eye on multiple databases and generates an alert when mismatches occur among prescribed drugs, patients' medical records and recent lab results. For the human resources department, Love created a dBase application to handle benefits reporting and risk management. "Why spend big money for a [commercial] benefits package when I can whip something up with dBase?" he asks.

Valuable skill

Given the widespread use of dBase and its reputation for difficultly accomplished dBase programs and programmers are in high demand. "I have a hell of a market for source code," Wulderk says. He developed a dBase application that looks at more than 800,000 claims files to find past insurers that bear some responsibility for current claims.

Borland International, Inc., which markets dBase, knows it can't rest on its laurels, however. So does Computer Associates International, Inc., which markets Clipper, the leading compiler for dBase applications. Both firms continue to push dBase and its XBase programming language into the client/server world. A Windows version of dBase, currently undergoing alpha testing, is due next year, and object extensions to the dBase programming language are promised. CA's version of dBase, dBPlus, already provides Windows capabilities.

Although some dBase programmers, such as Love, are quite satisfied with the character-based interface, others are itching for Windows and object capabilities. "I expect much better editing with

Windows," Wulderk says. "Now, multi-table editing is hard. And objects will make it easier to build interfaces."

For those wary about trusting important applications to a proprietary product, Borland promises to open up dBase's XBase language through an ANSI XBase specification. The first phase will address the base-level language. A second phase will address client/server extensions for SQL and, eventually, objects. ■

—Alan Radding

dBase rides again

dBase sales for 1993 are expected to be above last year's figures — the first increase in at least five years

	1992 revenue (millions)	1993 revenue (millions)	Share of programmable DBMS market
Borland's Paradox (all versions)	\$219.1	\$476.7	3.3
Microsoft's Access	\$342	\$247.5	2.7
Borland's dBase	\$185.1	\$215.8	1.5
Microsoft's FoxPro (all versions)	\$114.1	\$191.2	2.1

Source: Computer IntelligenceCorp, Santa Clara, Calif.

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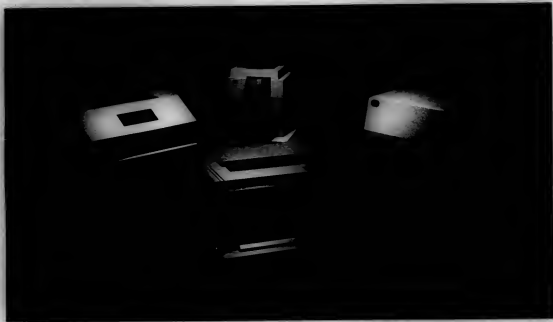
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Borland, Microsoft dead even in Windows DBMS matchup

By Michael Sullivan-Trainor

In the Windows database management system market, it's not enough to be good. You also have to be different. With 60% of the market just about evenly split between them, Borland International, Inc. and Microsoft, Corp. achieved matching total scores in our Buyers' Satisfaction Scorecard, indicating that both vendors' offerings are good, but users don't see much distinction between them.

More than 140 users of Borland's Paradox for Windows and Microsoft's Access and FoxPro for Windows participated in the survey, which revealed that buyers place higher value on reliability, data integrity and ease of use than they do on differentiating features such as Paradox's object-oriented capabilities and Access' application linking ability.

Borland's Windows database strategy is based heavily on object-oriented tools. In fact, the company recently announced that

dBase IV for Windows, due out next year, will include object extensions [CW, Oct. 4]. Such features in Paradox for Windows were rated highly by users but placed 22nd in importance out of 25 categories.

Part of the low importance standing of object-related features may be explained by the learning-curve users go through to attain expertise with the new features. Paradox received the lowest rating of the three products in compatibility with previous applications.

However, ease of programming—where much of the power of objects is applied—yielded Paradox a higher rating than Access, but one that was just about even with FoxPro.

Sweet benefits

Object Linking and Embedding (OLE) 2.0 features will be implemented more ambitiously in Microsoft's Office suite of applications this month [CW, Oct. 4]. As a member of the suite, Access benefits from such features. But OLE received a low importance rating:

21st out of 25 categories.

Just ahead of these feature wars on the importance scale, according to the survey, is the battle over upgrades. Borland received slightly higher ratings for delivering frequent and reasonable upgrades. User satisfaction with this area was high overall despite the fact that while new package prices have been falling 15% a year, upgrade prices have been rising about 20% over the past two years [CW, June 21].

Methodology

Buyers' Satisfaction Scorecard surveyed users of the market-leading Windows DBMSs. Response bases included a minimum of 40 users per product. A total of 141 users responded to the survey, which rated the products across 25 categories to assess their performance in key areas. Their names were randomly selected from the Computerworld Buyers Database. The survey was conducted by First Market Research in Austin, Texas. For more information contact Michael Sullivan-Trainor, (800) 343-6474, ext. 229. ■

Stand-out scores

Object-oriented capabilities	
IMPORTANCE: LOW	SCORE
Paradox	7.9
Access	6.9
FoxPro	6.7

Client server performance	
IMPORTANCE: MODERATE	SCORE
Paradox	7.0
Access	6.3

Ease of use	
IMPORTANCE: HIGH	SCORE
Paradox	7.3
FoxPro	6.9

Each PC DBMS had a distinctive area in which it outscored the others by a substantial margin.

Ratings are based on a 1-to-10 scale, where 10 is highest. Importance rates the level of priority users place on the category in buying decisions.

Borland's Paradox for Windows

1992 MARKET SHARE: 33%

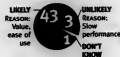
TOTAL SCORE: 62

RESPONSE BASE: 47 USERS



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST.

Would you buy the program again?



REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS.

Microsoft's Access

1992 MARKET SHARE: 17%

TOTAL SCORE: 62

RESPONSE BASE: 52 USERS



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST.

Would you buy the program again?



REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS.

Microsoft's FoxPro for Windows

1992 MARKET SHARE: 13%

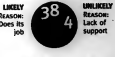
TOTAL SCORE: 62

RESPONSE BASE: 42 USERS



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST.

Would you buy the program again?



REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS.

Ratings in order of importance

RESPONSE BASE: 141 USERS



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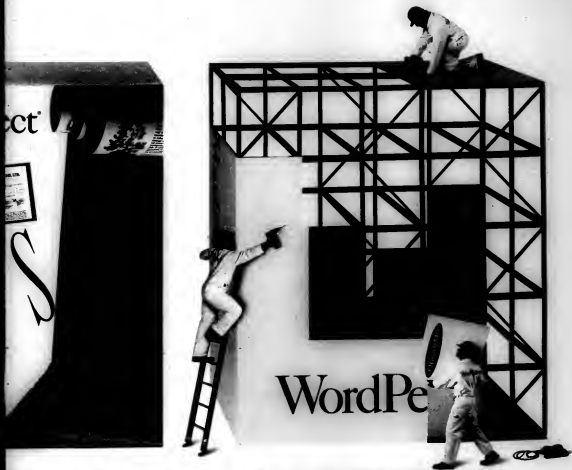
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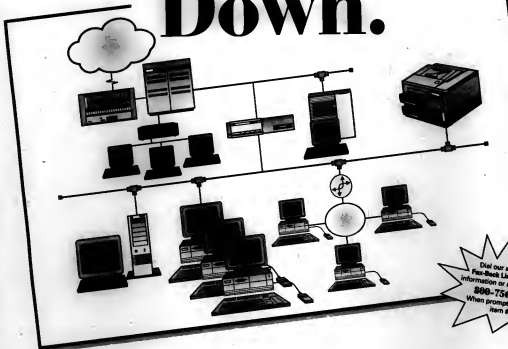


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 (i) ☐ DB/DB (j) ☐ Other (k) ☐ Other
 (l) ☐ CASE (m) ☐ Other
 (n) ☐ Other

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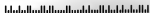
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Lotus' Approach: Easy to use and install; lags on reporting

Approach

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

■ **Evaluators said Lotus Development Corp.'s Approach is an excellent database for corporate and desktop use, with reliability, installation and networking taking high marks, but they wished for better performance in queries and sorting.**

Take a celebrated Windows database, add the backing of a high-profile software giant and what do you get? According to the evaluators who helped in this look at Lotus Approach database, the result is a mature product that will find ready acceptance in many corporate settings.

Originally released in 1992, Approach quickly gained a following due to its relational capabilities and its ability to work with many database formats including Borland International, Inc.'s Paradox and dBase, Microsoft Corp.'s FoxPro and Oracle Corp.'s Oracle. The database has also been applauded for its easy-to-use interface and end-user orientation. Our evaluators said last June's purchase of Approach Software Corp. by Lotus has made the database a viable choice for mission-critical, corporate applications.

The evaluators for this survey included information systems managers from a hospital, a national food wholesaler, a major accounting firm and a global manufacturing company. The hospital evaluator had completed applications for asset and patient tracking; the food wholesaler evaluator had recently converted fleet management and personnel databases to Approach; the accounting firm's developer was responsible for an extensive Approach application with more than 90 forms and 10 linked databases; and the manufacturing firm's IS manager oversees a variety of Approach databases being used by more than 250 employees in marketing, sales and billing departments.

This survey was developed with the assistance of Howard Rubin

Associate and Technology Investment Strategies Corp.

Reliability

After more than 18 months of availability, Approach is a mature product, the evaluators said. They reported no problems or failures that could be attributed to the database.

Hospital: "I was surprised there were no failures since we try to keep everything in DBF format."

Performance

If anything, Approach could stand improvements in its querying and sorting speed. The evaluators said users sometimes complained about response times. None considered this a great problem given the comparative benefits of Approach in other categories, such as ease of use.

Manufacturing: "I don't know what can be done [to improve performance] given the size of our databases, some of which have 300,000 records."

Ease of use

The evaluators said Approach fits in the ease-of-use category. They reported that end users and developers benefit from an intuitive interface that provides easy access to development tools and querying and reporting facilities.

The hospital and wholesaler evaluators said converting data from earlier database applications was easy. The evaluators concurred that ease of use was a major reason behind their decision to use Approach.

Wholesaler: "At the time I got Approach, I was thinking of rebuilding a dBase program, and I was going in circles."

Technical support

The evaluators said Approach required little technical support from either Approach Software or Lotus. The evaluators reported that technical support, when needed, was efficient and accurate.

Installation, networking

Installation was simple, the evaluators said, because Approach is delivered on only two 1.44-byte floppy disks. The accounting and manufacturing evaluators, both of whom had extensive experience with networked Approach databases and their applications were easy to configure.

Manufacturing: "The connection to Oracle databases was easier than we thought. Other database programs we tried presented nasty [installation] scenarios."

Queries and reporting

Although they considered the Approach query and reporting facilities adequate for most users, the evaluators wished for enhancements in both areas. One major complaint was that repetitive queries and sorts were often not transferred to reports. The evaluators also said that data queries sometimes did not produce the proper results and that identical summary fields could sometimes not be used in two different reports.

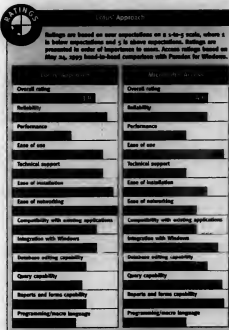
Accounting: "For the majority of users, it's fine. They have some tweaking to do at the high end."

Manufacturing: "When power users begin working with it, they say, 'I wish I could do this or that. They can hit the wall.'"

Programming

Approach provides a macro facility to automate some tasks. Macros are constructed from an extensive dialog box and, once completed, can be attached to buttons or included in the main pull-down menus. No procedural programming language is provided. The evaluators considered the programming capability adequate and useful.

Accounting: "You can't make stupid mistakes with the macros." Written by Computerworld senior editor Gerry Ray.



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THE WHITE MAN'S CLUB

By Julia King

Patrice Brown is a 34-year-old senior systems programmer and the only black staffer in the 20-member information systems department at Elf Atochem North America, a chemical company in Philadelphia. Before that, she was the only black systems programmer in her group at Cigna Insurance Corp.

"It's usually like that," Brown says.

"Usually like that," indeed. Minorities continue to make very limited progress in the IS profession. The U.S. Equal Employment Opportunity Commission (EEOC) notes that in 1991 (the most recent year for which figures are available), 13.9% of IS professionals were minorities. That's only a 1.9% hike from 1988, when 12% of IS staffers were minorities, according to the EEOC.

At the management level, things look even bleaker. In a recent *Computerworld* survey of 107 IS people, only 5% said their organization's top executive was a minority. The U.S. average is even lower, says the EEOC, with minorities representing only 8.5% of technology managers nationwide.

Yes, the old (white) boy network is alive and well in corporate technology shops, says Suzanne Phillips, president of ProSearch, Inc., a Conshohocken, Pa. IS recruiting firm.

Part of the problem, observers say, is the country's recent economic slump. Virtually all large companies are in some phase of downsizing, which means aggressive budget and staffing cutbacks in IS groups across all industries. Cultivating a culturally diverse work force is not a top priority.

In fact, the *Computerworld* survey found that minority hiring in the past year has been at a standstill. Seventy-four percent of respondents said the number of minorities in their IS organizations has stayed the same in the last year, with 7% saying that number has actually decreased.

"Companies like IBM that have had a series of [financial] problems aren't focused on cultural diversity programs. They're laying off people," says Beverly Lieberman, president and owner of Hallbrecht Lieberman Associates in Stamford, Conn. Lieberman estimates that only about one-third of Fortune 1,000 companies have some sort of formal cultural diversity hiring program or policy.

Minorities can expect fierce competition for jobs at all companies, even those like Chicago-based Kraft General Foods North America, which boasts an in-house cultural di-

White man's club, page 136

Minorities still represent a small percentage of the systems work force, especially at the management level

STATUS

Is your top IS executive a minority?

NO

90%

YES

9%

DON'T KNOW

1%

—Black 3%
—Hispanic 2%
—Asian 1%
—Other 3%

Base: 107 IS professionals

Source: *Computerworld* Database Edition

King is free-lance writer in Ridley Park, Pa.

White man's club

CONTINUED FROM PAGE 135

iversity program and a history of recruiting candidates from at least one predominantly black college, Washington's Howard University.

Higher standards

Earlier this year, Kraft hired 10 systems staffers, but for every person who got a job, three other highly qualified candidates were turned away. "There are fewer jobs, and the competition is very keen," says Willie Fields, who is 54, black and the company's director of corporate business systems. "We have been able to find minorities who have been able to compete, but they need to know the bar has been raised."

Fields says that five to seven years ago, a near-3.0 grade point average and a good mind for information technology

would land a job. Today's emphasis is on top-notch qualifications, not enhancing the company's cultural diversity.

The going gets tougher higher up the ladder. "In my present job it's not an issue at all. But when I worked for a small private firm many years ago, it was never spoken, but it was known that there was a level of promotion that you could never get past," says Enrique Crespo Jr., manager of corporate sales systems at Torrington Co., a manufacturing division of Ingersoll-Rand Co.

Michael Hwu, manager of systems and software development at the Four Seasons Hotel in Toronto, says he thinks the problem comes down to communication.

"There's big money involved [in projects]. You've got to convince people of why they have to buy your project," Hwu

Priscilla Brown:
"As a minority,
you can get
lost because
you're there by
yourself."



says he has seen few minorities with the skills it takes to present a project.

Lieberman notes that minorities may be caught in a vicious cycle; with so few of them at high levels, most can't gain the presentation and management skills needed to get noticed, which may keep them from advancement.

Hwu, 38, acknowledges that his rise from programmer/analyst to management may have been easier than for most because he got involved in a company without an established IS presence. (He was one of two original IS staffers.) There were no predisposed notions of the typical IS person and no "political mountain" to climb to get ahead.

Despite Hwu's example, however, he is the only minority on the 16-member IS staff at Four Seasons.

Few and far between

Like Hwu, Brown says she does not believe her chances for advancement are impeded just because she is a minority. Still, she says she can't help but notice that there is only a very small percentage of minorities who hold high positions in IS organizations. Women, for instance, held the top IS job at only 12% of the 107 companies *Computersworld* surveyed.

"You have to question whether human resources departments are getting information about jobs out to minorities," she says.

Are there any bright spots? Fairlie says she is beginning to see more companies, primarily those in heavily market-driven industries such as pharmaceuticals and cable television, actively recruiting minority management candidates as well as grooming minorities already on the job for upper-level posts.

"The more progressive companies are aware that not for legal reasons but for business reasons they have to integrate," Fairlie says.

Companies may not have a choice. According to a 1991 government study

called *Workforce 2000*, only 15% of entrants to the work force in the year 2000 will be white males. In 1991, that figure was 47%. Between 1981 and 2000, nearly two-thirds of workers joining the employment ranks will be women.

"It's the companies that are concerned with the bottom line that are now moving forward" in minority hiring, Fairlie says. "They realize they have to in order to stay competitive."

Over the years, certain progressive companies, including Johnson & Johnson, John Hancock Insurance Co., 3M Co. and General Electric Co., have established positive track records in cultural diversity, according to executive recruiter Lieberman.

Unfortunately, Lieberman notes, these companies are all outside the financial services and telecommunications industries, which far now is where almost 50% of the IS jobs are. "The companies that

White man's club, page 139



Source: EEOC, 1991



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2. All entries must be signed by the IS executive and one of the business unit executives who sponsored or led the re-engineering team.

3. Include the name, address, phone and fax number of the two entrants, along with two or more references who are familiar with the project and are willing to be interviewed. One reference should be a beneficiary of the project: a customer, supplier or user from the sponsoring business unit.

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Contact is open to all end-user organizations, consulting firms and system integrators. Companies selected for consideration will be contacted by a representative of CW Publishing, Inc. for further details and verification. The winner will be chosen by a panel of *Computerworld* editors.

COMPUTERWORLD
The Newspaper of IS

White man's club

CONTINUED FROM PAGE 136

are hiring the most technology people are the Morgan Stanley, First Boston and Fidelitys of the world," she says. "They're hiring Unix and C++ [experts], and they're recruiting aggressively. They are indeed hiring anybody who can do the job," she says.

feeling both uncomfortable and isolated as a black woman in an overwhelmingly white male profession.

"As a minority, you can get lost because you're there by yourself and have no one else to recognize your experiences," Brown says. "You feel that isolation. It may not be intentional [on the part of nonminority employees], but you still feel it."

Senior editor Lory Zottola Diz contributed to this report.

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STATUS

White minorities
have made strides
over the last five
years in IS...

NUMBER OF MINORITIES

Increased	46%
Decreased	11%
Same	36%
Don't know	13%

... their presence
has declined in the
last year.

NUMBER OF MINORITIES

Increased	17%
Decreased	7%
Same	74%
Don't know	2%

Does not IS professionals

Source: Computerworld Database Division

Yet Lieberman isn't overly enthusiastic about minority representation in the ranks of financial service companies.

"It is only in companies where there is a proactive human resources executive who has the ear of the president that cultural diversity programs are strong," she says. "And in financial services, brokerage and investment banking, human resources has traditionally been weak."

Long road ahead

Earl Pace, president of Pace Data Systems, Inc. and co-founder of Black Data Processing Associates, says there is some truth to the statement that companies are preparing for the upcoming change in work-force demographics by establishing cultural diversity programs.

"They see the handwriting on the wall," Pace says. "But the attitude is: 'Let's do this thing as slowly as we can.' I don't see corporations moving ahead with any deliberate speed. It's window dressing for now."

Fleides says he, too, does not see companies moving ahead aggressively with cultural diversity programs. "PR is the primary issue today," he says. "[True] cultural diversity will be more of a 1996-99 issue."

For now, any successes tend to be hit-and-miss. Brown says that while she has not had any direct experience with on-the-job discrimination, she has seen it in places she has worked. And it has been hard to rise through the ranks without



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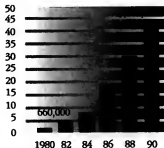
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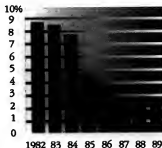
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Computer Careers

Leave analysis behind

Learn to adjust to a less structured and more chaotic, iterative development process through rapid application development

By David Baum

to MOST PROGRAMMERS still design systems the old-fashioned way, using a syntactical language and a step-by-step waterfall approach to get through the development life cycle. The results of one cycle phase spill into the next, and each phase must be completed in an orderly, serial fashion — analysis, design, code, test and deploy. User needs are identified, a design is frozen based on those needs and implemented by coding the application.

This approach, however, allows too much time in the early phases without realizing any tangible benefit. It also assumes that user needs can be accurately identified by reviewing written specs. If needs change once the requirements are

set, however, it becomes costly to fix.

Such problems have led to the adoption of a rapid application development (RAD) approach based on the concepts of iterative development using rapid prototyping tools. Most rapid prototyping approaches devote less time to early analysis and design phases, encouraging developers to dive in and mock up an application prototype. The prototype is then refined based on user input in an iterative fashion as the finished application takes shape.

To succeed using a RAD approach, Eric Clayberg, project manager at American Management Systems Co. in Arlington, Va., says the key is learning to balance traditional analytical skills with a more spontaneous approach. Step one is still identifying the business requirements, Clayberg says. Then, instead of spending weeks deriving written specifications for users to review, you sit down and start prototyping the application.

It can be difficult at first, but you become adept at thinking on your feet. Ultimately, you can design better systems because the rapid prototyping process leads you to discover types of functions you wouldn't have thought of initially.

"If you sit down with a rapid prototyping tool, you are going to see new kinds of interactions among the data, new ways to juxtapose windows, new ways to link application functions," Clayberg says.

The trick for programmers is to learn the proper balance between planning and spontaneity. You need to have a

strong sense of the business requirements before prototyping, but you don't want rigid, predetermined views of the final system to restrict creativity.

Succeeding with RAD

Lengthy analysis isn't so important with the newer, RAD-oriented tools because it's easy to change what you create as you go along. Previously, a mistake in the interface could mean redesigning the underlying data structures. Now the interface comes together quickly and can be

changed quickly. The data structures can be added later.

"It's hard to comprehend how easy a product like Visual Basic is to use until you sit down with it," says Chris Barlow, a software engineer at Sun Hydraulics Corp. in Sarasota, Fla. "In three minutes, I can create a full-blown text-editing window with mouse control, buttons, save functions and a lot more."

Baum is a free-lance writer in Santa Barbara, Calif., who specializes in emerging technologies.

A RADICAL CHANGE

Developers insist that talk about leaving analysis behind is a myth. "You still need to carefully analyze the business problem," says Eric Clayberg, a project manager at American Management Systems. "You need to have a good mental model of the system and a clear view of where you're going."

Here's one technique Clayberg uses to teach mainframe programmers how to adjust to new RAD tools:

- Spec out the first dozen or so tables, getting a firm idea of how they fit together.
- Let the process of building the user interface naturally uncover additional data requirements.
- Have a sense of the basic database

requirements. Make sure that:

- The data is normalized.
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The real difference? It's the starting point. It's not a complete set of written specifications but a basic road map that leaves room for the creative process to unfold. "You aren't necessarily leaving analysis behind. You are just approaching it from a different direction," Clayberg concludes. "This is what allows you to create a superior system."

—David Baum



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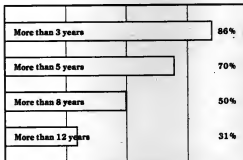
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ROAD

A few important tips on recruiting computer professionals

Finding computer talent isn't as easy as it used to be. In fact, there was a time when you'd just run an ad in the local newspaper and you could make a hire without waiting too long or spending too much.

But times have changed. And like so many facets of today's business, so has the effectiveness of traditional recruiting methods.

What's more, many of today's recruiters don't use today's most efficient methods — methods that save time and money for some widely unknown reasons.

The supply of qualified professionals isn't meeting demand



The American Council on Education reports that the number of college students choosing computer careers is down two-thirds since 1982. To make matters worse, there are more computers in today's business market than ever before. And while you may never consider the company next door your competitor, it likely is competing for the same computer talent today. The result is a classic supply/demand problem that is isn't changing for the better — and that's sure to make your recruiting tougher in the '90s.

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That's because they generally reach "active" job seekers — those who actively seek out the local newspaper to find jobs — and who a recent *Computerworld* job satisfaction survey found to represent 2 in 10 of today's computer professionals. The study also found that 7 in 10 of today's computer professionals are "passive" job seekers — those who



would consider new job options, but likely never look for them in the local newspaper. (The remaining small percentage are "non-movers" content with long-term jobs.)

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Marketplace

Start-up telecom providers pass on savings

By Joe Panepinto



Prior to 1994, choosing a telecommunications service provider was easy—you picked up the telephone and called Ma Bell. Today, especially with new niche telecommunications service vendors popping up all the time, what used to take a single call—local, long-distance, voice and data services—takes months of planning and plenty of know-how.

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It used to be for IBM—you won't get fired for going with AT&T."

As was (and is) the case with IBM, however, AT&T is feeling the squeeze from all sides as small start-ups rush to provide specialized services for everything from WANs and leased lines to cellular and international telecommunications. With such vigorous competition, you can be sure there are bargains to be had.

"Never, never, never tell a vendor to give you whatever you need because they will charge you a premium on everything," says Ed Roberts, telecommunications manager at Fletcher Construction of North America, a large outfit in Seattle. Many times it works out that the smaller the vendor the better, even for large companies, he says.

With the market so dynamic and telecommunications managers stuck in the Ma Bell way of thinking, small or relatively unknown telecommunications service vendors are being aggressive and taking the savings directly to end-user organizations. For example, Fletcher Construction of North America had been using Cellular One for cellular telephone service and was being charged roughly 32 cents per minute when a smaller provider offered the same service for 10 cents less per minute. He called other users, checked their support records and signed with the smaller provider.

To take advantage of such savings, Roberts recommends keeping contracts as short as possible.

Panepinto is a free-lance writer in Amherst, Mass.

Using a seal-of-the-pants shopping style for telecommunications services may work for some, but it's an option in which few can indulge. Large organizations use the following methods when selecting a provider:

Via International, Inc., San Mateo, Calif.: Via has set rigid guidelines to evaluate the services of outside vendors, as well as internal organizational needs.

How: To evaluate global satellite services, Via has assigned a project manager and formed a group with people from various corporate departments. The group develops evaluation criteria and assigns weights to each. The list includes hard information such as price and mean time between failure, and softer information regarding a vendor's service record, reputation and potential for bringing future developments to the table.

"This elaborate set of internal rules helps guarantee all products and services are evaluated on an equal basis," says Morgan Taylor, telecommunications manager. A lot is at stake. Taylor says his budget for voice and data telecommunications services is more than \$10 million per year.

Los Angeles County: Los Angeles County has an internal process for evaluating requirements that kills two birds with one stone.

How: While it analyzes the county's telecommunications needs, this process also puts together key information to include in a request for propo-

als (RFP) for new services. In the past six months, the county has settled at least two major telecommunications contracts, a Centrex services agreement with Pacific Bell and a new long-distance service agreement with MCI Communications Corp. worth \$1.1 million per year.

A critical key: When assembling the RFP and evaluating vendor bids, a detailed report of telecommunications service use was culled from six months of billing information. Vendors were asked to bid on the basis of the summary statistics and use patterns.

As part of its telecommunications services contracts, Los Angeles County also requires providers to offer billing tapes or files that it can analyze using specialized billing analysis software.

Currently, Los Angeles County gets bills for telecommunications services from about a dozen vendors that are run through the software and summarized into management forms that detail use.

The software also has a database of equipment the county leases, including telephone lines, that it checks against incoming bills to ensure that all charges are appropriate.

"The more you know about your requirements, the better able you are to make informed decisions about purchasing services," says Tom Lang, an internal consultant with the Los Angeles County.

"That doesn't mean you're going to necessarily make good decisions, just informed ones. In this market there is still lots of guessing involved and some luck."

—Joe Panepinto

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Computer Industry

Briefs

Everex finds buyer

Everex Systems, Inc. has been sold for an undisclosed amount to Yulise Investment Group, an alliance of Taiwanese companies. Yulise said it will keep the Everex brand name alive to gain a foothold in the U.S. PC market.

Wellfleet soars

For its first fiscal quarter ended Sept. 30, Wellfleet Communications Corp. reported revenue of \$72.4 million, up 15% from the same period a year ago. Net income was \$11.6 million, up 15% from the quarter a year ago.

Isomega posts loss

Isomega Corp. reported third-quarter net income of \$800,000, an 80% decline from the comparable period last year. Revenue in the quarter was \$26.1 million, off slightly from the year-earlier period. Isomega recently said it will lay off about 100 employees in a cost-cutting move [CW, Oct. 11].

Drive maker cuts 290

Conner Peripherals, Inc. has cut 290 employees as part of an overall, ongoing effort to rene the company because of market conditions and its acquisition of Archive Corp. in late 1992. Other elements of the restructuring will be announced with the release of third-quarter results on Thursday. Since January, 2,700 jobs have been cut.

SHORT TAKES **PLAN** **Microsoft** bought **Media Software, Inc.**, a provider of consumer financial software. **Stratus Computer, Inc.** signed an agreement to buy the assets of **Bedford Hills Systems** Integration, Inc., an Atlanta vendor of networking software for Stratus' fault-tolerant computers and IBM's RS/6000 systems. The \$1.5 million deal, expected to be completed this month, is the second for Stratus under a plan to diversify by acquiring

Intel stock takes surprise hit

Price drop belies record earnings; company readies for PowerPC onslaught

By Michael Fitzgerald

SANTA CLARA, CALIF.

The spotlight cast an unflattering light on Intel Corp. last week, despite a record earnings report.

Intel's stock was hammered, falling nearly 7% the day after its earnings came out, even though the company virtually matched analysts' expectations by posting a profit of \$284 million on sales of \$2.24 billion for the quarter ended Sept. 25. This compares with a profit of \$245 million on sales of \$1.4 billion for the year-earlier period. Intel posted a profit of \$1.7 billion on sales of \$6.3 billion through the first three quarters, up from \$637 million on sales of \$4 billion a year earlier, making it among the most profitable companies in the U.S.

Intel's stock was at \$70.25 on Oct. 8, hit a high of \$71.50 on Oct. 11, then closed at \$65.50 after the news broke. It dipped even further to \$60.75 before finishing Friday at \$66.

Competition looms

Behind the contrarian stock drop is the potential for significantly increased competition next year in Intel's bread-and-butter 486 market. IBM, Texas Instruments, Inc., Advanced Micro Devices, Inc. and Cyrix Corp. will all ship 486 chips in volume next year.

Perhaps more ominous, at least in Intel's eyes, is the forthcoming threat posed by the PowerPC chip co-built by IBM, Apple Computer, Inc. and Motorola, Inc. IBM has already begun its PowerPC rollout, and Apple has said it intends to ship 1 million PowerPC systems in 1994. Groupe Bull also recently announced six new PowerPC-based workstations, which will be available in November in Europe and early next year in the U.S.

Such activity may have spurred Intel's recent decision to hold a press briefing at which an executive derided the company's RISC competitors, in particular railing against the PowerPC (see stories page 53 and 55).

Speaking at the briefing, David House, Intel's senior vice president of corporate strategies, singled out the PowerPC in many of his comments. He attacked its small software base and sneered at what

he said was inflated system pricing, given that the PowerPC chip costs nearly \$600 less than a comparable Pentium.

House compared system pricing for the new IBM RS/6000 PowerStation 250 workstation, which costs \$8,495, with a Gateway 500, Inc. S/386 \$4,290 price tag. He also compared a high-level version of the PowerStation priced at \$22,807 with a \$14,259 Desk Pro 5/95M from Compaq Computer Corp. The systems are comparable.

'Bogus' criteria

Further, he downplayed various technical features, such as the smaller die size, lower chip price and lower power draw, that recent Motorola advertisements have touted as reasons for the PowerPC's superiority.

"Those are all bogus [buying criteria], and we just want people to pick up on that," House said in a separate interview with *Computerworld*.

Meanwhile, officials from Motorola and IBM seemed more bemused than wounded by the assault.

"I guess I am somewhat appreciative of the attention," said Phil Pompea, director of marketing at Motorola. Pompea said the software market was not static, noting that developers were porting applications to PowerPC. He said some developers are even building software that takes advantage of floating point, a RISC strength and an Intel weakness.

John Holt, IBM's director of technical workstation marketing, claimed that "comparing RS/6000s with Pentium PCs is like 'comparing a thoroughbred to a quarter horse.' He cited the higher-performance, higher-cost graphics, internal bus structures and other components in any workstation vs. a PC. He also said that Intel quoted street prices on the PCs and list prices on the RS/6000s, adding that actual RS/6000 pricing can fall nearly 30% lower than list.

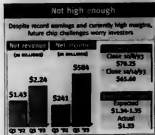
"Wait until the first part of next year, when IBM and other built PC-class machines around PowerPC," Holt added.

Reasons for concern

The PowerPC teams also announced last week an 80-MHz version of PowerPC (the current versions run at 50 MHz and 66 MHz) and will announce today that they

have reached first silicon on the 603, which is oriented toward portable computers [CW, Sept. 27].

Despite Intel's put-downs, it does have reason to be concerned. While Intel has touted Pentium and its follow-ons as its answer to the superior performance of RISC chips, those competitors still outperform Pentium in benchmark tests. Even House conceded that the PowerPC is 20% faster than the Pentium in floating-point operations. And the advent of platform-independent



dent operating systems such as Microsoft's Windows NT has focused industry scrutiny on Intel's ability to maintain not only its dominant market share but also its high margins.

Perhaps with that concern in mind, during the briefing, House, once Intel's leading RISC proponent, stressed Intel's huge installed base and application support, which analysts acknowledged gives it a step up in maintaining a grip on users' desktops.

But Dean McCarron, an analyst at Micro-Design Resources, Inc. in Scottsdale, Ariz., suggested Intel's installed base is not as dominant as it seems. "About a quarter of the market is non-Intel stuff, including [AMD and Cyrix]. All of that is potentially PowerPC," he said.

Odd claim

Taking another tack, House acknowledged that Intel-based vendors have lower prices in large part because of ferocious competition but argued that a similar clone market for RISC architectures will not develop.

This seemed an odd claim, given that Apple and Groupe Bull already plan to ship PowerPC-based systems, and other systems are in the works. Also, the PowerPC initiative is targeting the chips to a wide variety of noncomputer industries where Motorola is a dominant player, such as automobiles, giving it a way to spread development costs.

In addition, MIPS Technologies, Inc. has signed up OEMs for its chip as well.



Intel's David House: Addressing the threat in a potentially crowded market

New and Improved

Intel's Dave House acknowledged publicly for the first time that Intel's next 486 chips will have "higher frequencies and higher performance" than the current 486 chips. He thinks it's a new U.S. micro manufacturing process. He said Intel has working models of these chips, which are expected to be introduced within the industry in the Q3 and are expected out in early 1994 [CW, July 19].

Wysiwyg

Here are some of the major news stories from Computerworld's pages five years ago - let's see what has happened since the news broke in 1988.

IBM's first Intel Corp. multi-chip PC computer that was made in Japan is finally

now here. IBM has said that it doesn't mind, as long as the industry starts buying APX as an open interworking strategy. APX needs a jump-start. Gateway Group's David Patterson reports that only 15 out of 100 IBM managers at a recent Gateway Group seminar followed any interest in the architecture. So far, only four vendors have licensed APX Network: Netscape from IBM, SCO, Systems Strategies, NKT and, most recently, Cisco.

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WHAT ISSUES OR EVENTS ARE YOU TALKING ABOUT WITH YOUR PEERS? WHO LIKE TO KNOW. CONTACT STEPHEN McLAUGHLIN, MCJ MAIL 591-8021, FAX (508) 875-8931, PHONE (508) 343-6474.

The 5th Wave by Rich Tennant

Ever seeking a competitive edge, Dell Computer and Reebok codeveloped

The Dellbok 486 Cross-Trainer



Inside Lines

Anyway but how

Expert in built-in design features must work to dislodge their place for implementing IBM's APX Network. Netscape in their products—using source code from UK company Data Connections Ltd., not IBM. IBM has said that it doesn't mind, as long as the industry starts buying APX as an open interworking strategy. APX needs a jump-start. Gateway Group's David Patterson reports that only 15 out of 100 IBM managers at a recent Gateway Group seminar followed any interest in the architecture. So far, only four vendors have licensed APX Network: Netscape from IBM, SCO, Systems Strategies, NKT and, most recently, Cisco.

Anytime will do

Anytime will do is about to put some more meat on the bones of Anytime, software that lets applications written in one networking protocol talk to applications written in another. Coming this week is a book on the IBM gateway that will let systems running TCP/IP communicate with systems running Advanced Program-to-Program Communications (APPC)—without the need to run Anytime software on every one of those systems, said Frank Durbach of Communications Network Architecture. IBM will also make statements of direction to provide Anytime APX to TCP/IP products for AIX/400s and RS/6000s, as well as an OS/2 Anytime offering that will support NetBIOS over BNA.

Polishing the diamond

It's been a year and a half since Hewlett-Packard started a full-scale marketing information push with its line of corporate-ready systems called the HP DesignJet, and now the company is ready to put a little more shine on its gem. HP has scheduled conferences all this week to let users know about a new series that will use a 7100 version of HP's PS-SCRIPT interpretation, scale up to eight processors and represent a 1% time performance gain over the present series.

Why can't we get together?

Industry watchdog "Intercom X" reports that members of the 10-month-old OS/2 vendor consortium want to create an entity dubbed "Intercom" as a marketing firm, which would be detrimental to the OS/2 and Unix International. Business told Computerworld the proposal was "unacceptable" and IBM— which both belong to the OS/2— consortium. But by December time at that the three can move accordingly without Vista.

PS/Who?

Look for The PC Co. next month to add IBM's like Lightning processors, including the recommended 16,750,000 clock-cycles, to the PS/2 Models 70 and 72, and the 10,750,000 clock-cycles to Models 60 and 65. PC Co. will also introduce a low-cost Model 50, based on the 10,750,000 clock-cycles, with smaller hard drive configurations and a lower price, sources said. The PS/2s will also come with optional CD-ROM drives and modems versions that also have Ethernet or Token Ring interfaces on the mother board. Prices could be as much as 20% less than those of existing PS/2s, the sources noted.

As the disk drive spins

Compaq, meanwhile, will introduce an IBM 1.44 Diskette II, with a full range of 486 processors, Enhanced Desktop Audio and Microsoft Corp.'s Windows Sound System. It will also come with some special features, enhanced with Windows 3.11 and Windows Professional with an integrated design, multimedia-capable Pentium processor.

Hewlett-Packard is planning to launch Color, Supersize Edition, chief marketing officer at the company. The company's National Information Marketing, a program manager of connectivity for the fall-on to Windows NT, is also planned. The outgrowth 34-year-old is also in part of Microsoft's on Oct. 18. Plans, for or Compaq's new series, are also planned with new line at (617) 344-0274, (508) 875-8931 or (508) 343-6474, respectively. Or try Computerworld's 24-hour toll-free line at (800) 890-7645.



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